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Protecting Orchards From Rodents and Game

by S. W. Fletcher
Pennsylvania State College

BEFORE winter sets in, the problem of protecting fruit trees should be considered, especially by those who have sod orchards. The main preventive of mice injury is cultivation. Mice must have cover. They occasionally do some damage in a poorly cultivated orchard, with sod beneath the trees, or when a heavy cover crop is on the ground; but practically all of the really serious damage is in sod orchards. In some winters, especially when the snowfall is heavy, the loss from tree girdling by mice amounts to hundreds of thousands of dollars.

Remove Grass and Weeds About the Trees

There are several types of preventive measures. Perhaps the most common one is to approximate cultivation by hoeing the grass and weeds away from each tree for several feet, and by banking soil or coal ashes around the trunk. If soil is used, be sure that it is free from sod and weeds, otherwise the mice may nest in it. Coal ashes are much better.

Protective Covers

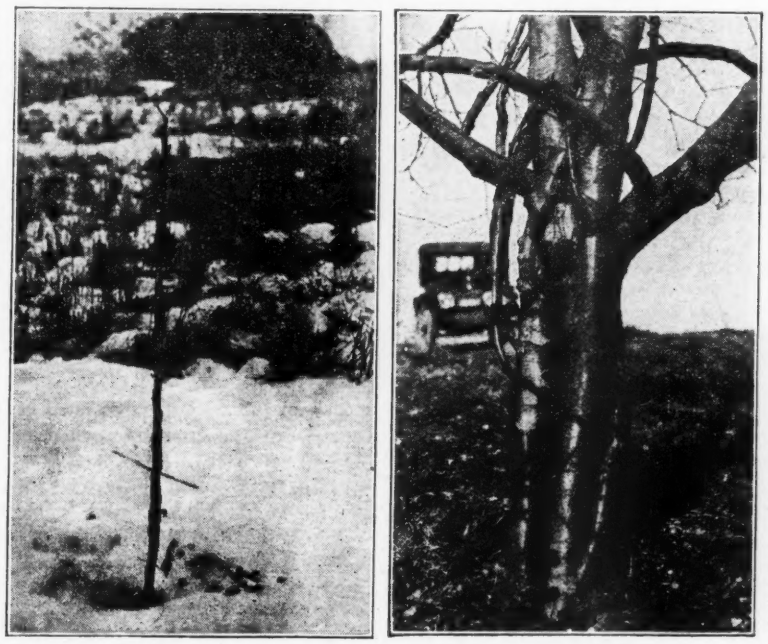
Another preventive measure is to cover the trunks with protective wrappers, such as wooden veneer, wire screening, gunny sacks or newspapers. Each of these has merit, but newspapers are about as effective as any, and they certainly are cheaper. Several thicknesses are wrapped around the tree and tied above and below. It is well to sink the lower end slightly below the surface and bank soil against it. Strange as it may seem, these paper wrappers are reasonably effective against rabbit depredations also. Building paper may be used, but not tarred paper, which sometimes injures the bark. All types of mechanical protectors should be removed in the spring, for otherwise they may harbor pests and injure the bark.

Repellent Washes

Closely allied to protective coverings are repellent washes. Various materials have been used and have given more or less satisfaction at times, such as soap washes, rabbit, hog, or slaughter house blood, pure white lead paint, coal tar and axle grease. All of these are more repellent to rabbits than to mice. Those who make lime-sulphur concentrate on the farm will find the sludge useful for this purpose. At best, however, repellent washes are not as satisfactory as protective wrappers, since the washes are likely to weather off before the winter is over. Some of these, especially coal tar, axle grease and paint, may injure the trees. Pure white lead and raw (not boiled) linseed oil, painted on the trunks of young apple trees annually, have afforded full protection in many cases, not only from rodents, but also from borers. Unfortunately, there is an element of danger in the use of this mixture, especially if the ingredients are impure.

Fall Pruning Helpful in Mice Control

In recent years, quite a number of growers have demonstrated the value of fall pruning for mice control. If a part of the pruning of each tree, not necessarily all of it, is done in the fall, the mice are likely to feed on the tender bark of these branches lying beneath the tree in preference to the tough bark of the trunk. I have seen a number of orchards where branches on the ground were stripped by mice while the trunks were untouched.



Left—Trunk girdled by rabbits and branches cut off as with a knife. Covering the girdled portion with grafting wax may help, but it will probably be best to plant a new tree. Right—Girdled tree saved by inarching suckers from the roots. The tree is not beautiful, but the method is effective

Poisoned Bait for Mice

Poison baits are used to some extent for mice. The Bureau of Biological Survey of the United States Department of Agriculture has been experimenting with different baits for several years and now recommends the following formula:

Mix together, dry, one-eighth ounce powdered strychnine and one-eighth ounce baking soda. Sift the mixture over one quart rolled oats (this is preferable to wheat), stirring constantly. Heat the poisoned oats until warm. Mix three quarts of melted beef fat with one quart melted paraffin, and sprinkle six tablespoonfuls of this mixture over the warm, poisoned oats, and stir.

Tablespoon quantities of the bait should be placed in small containers to protect them from the weather and distributed over the infested area; also scattered along runways (below the surface). The containers should be refilled in the fall and in the spring. The container may be a small drain tile, wide mouthed jar, or preferably a home-made wooden box, the bottom six inches square, the top eight inches square, and the two sides one and one-half inches deep. Where mice are very serious, one of these containers should be placed beneath every other tree. Poisoned baits are effective and practicable, especially in very large orchards, but are open to the objection of the danger to children, livestock and birds.

Traps and Predatory Animals

Mice traps are used somewhat. It is reported that one extensive apple grower in Virginia uses 20,000 traps. This method is not likely to commend itself to most growers.

Predatory animals are useful. One or two good dogs will just about keep down the mice in a 20-acre sod orchard. Cats and owls are helpful, to say nothing of skunks, blacksnakes and rattlesnakes, if you choose to cultivate the friendship of these wild neighbors.

Tillage Is Best Method

After all, the fundamental corrective for mice injury is orchard tillage, wherever practicable, practiced often enough to prevent the formation of a grassy sod beneath which mice find cover. Mice are rarely serious in a temporary red clover sod, or in an alfalfa sod (until it gets grassy) for this reason. As for rabbits, there is no better place for them than the pot pie. Shotgun control is eminently satisfactory, especially for a fruit grower who likes to hunt as well as I do. Under certain restrictions, the small son can also catch them in a box trap, even after the open season for hunting.

The Deer Problem

The approach of the deer hunting season reminds many fruit growers of their grievance against the state for permitting protected game to injure their orchards. With the rapid increase in the number of does, which in most states are protected at all times, this is becoming a serious problem in some sections. Deer now cause a loss to the fruit growers of Pennsylvania of tens of thousands of dollars annually; if there is not some change in administering the game laws, this loss will be doubled in a few years.

The experience of John A. Runk of Huntington county, Pennsylvania, may be cited as an illustration of what is happening in many parts of that state and of other eastern states. His or-

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Use of Fruit in Carbonated Beverages

by J. H. Irish
University of California

THE USE of fruit for beverage purposes dates back to early antiquity. The use of wine was universal. It was as common and supposedly as necessary as the air we breathe or the water we drink. In fact, it became such an important factor in their lives that it entered their religion and they had their God of Wine, Bacchus, to whom they paid homage. Bacchus was the symbol of joy and happiness, "that joy and happiness, however, which comes at night accompanied by song but which wakes in the morning with a heavy head."

All fruit beverages in those early days were the products of alcoholic fermentation. Not until the days of Pasteur did man learn that the forces of nature could be arrested in their course and that all "sorrow" could be removed from such fruit products.

With the advent of prohibition came the demand for beverages to take the place of alcoholic beverages prohibited by the law.

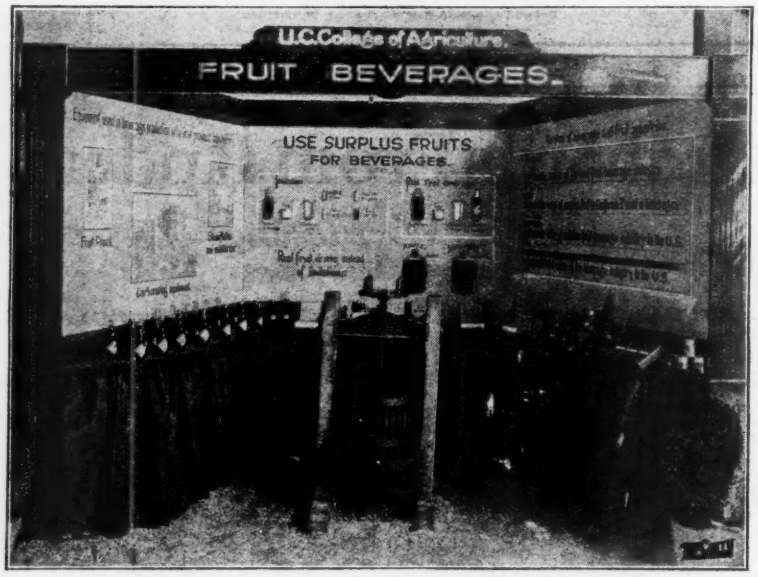
For the last 10 years the fruit industry has been rapidly growing. Large acreages have been planted every year. This extensive planting was stimulated during the war by the demand for more food and since that time by the high prices received for products during the war.

For several years the production has taxed the markets with a surplus. With some fruits, slightly more than one-half of the plantings have come into bearing. New outlets are being sought for the ever-increasing surplus.

The fruit industry now turns to the beverage industry in the hope of finding a legitimate market for a large part of the surplus.

Investigations at the University of California

For the last five years extensive investigations have been carried on in the Fruit Products Laboratory of the University of California under the direction of Prof. W. V. Cruess, for the perfection of carbonated beverages made from real fruit. A complete report of these investigations is contained in Bulletin 359 of the College of Agriculture, Agricultural Experiment Station (entitled "Fruit Beverage Investigations"), which may be obtained upon request.



Fruit beverage display of College of Agriculture at California State Fair. The chart at the right shows that the value of the real fruit beverage industry is about $10,000,000; that the surplus fruits of California would be worth $100,000,000 if used in beverages; that the value of the imitation fruit beverage industry of the United States is about $200,000,000; and that the total value of the beverage industry in the United States is about $1,300,000,000

Extent of the Beverage Industry

According to the Report of the Commissioner of Internal Revenue for the year ending June 30, 1923, 163,329,982 gallons of soft drinks were produced in the Unted States and possessions. This includes cereal beverages containing less than one-half of one per cent alcohol, unfermented grape juice, still drinks containing less than one-half of one per cent alcohol, natural and artificial mineral waters. Apple cider is not listed in this report. This represents approximately 2,613,279,714 eight-ounce bottles, or 26 bottles per capita, which shows a decrease of 70 per cent from the report of the previous year.

What is the significance of this decrease? Does it mean that people are becoming more discriminating in what they drink and are demanding a higher quality? Since they are not finding the higher quality beverage, are they abstaining from all? If this is the case, it is time for us to produce beverages which can be advertised for their high quality and not by some catchy slogan only.

With this large annual production of beverages, and probably less than five per cent made from real fruit, there is every reason to believe that there is a large outlet for fruit through the beverage industry.

Types of Carbonated Beverages

There are three types of carbonated beverages on the market:

1. *Synthetic Beverages*, which are made from artificial color, artificial flavor, sugar, citric or tartaric acid and carbonated water. The law requires that they be labeled imitation.
2. *True Fruit Beverages*, which are made from the so-called "True Fruit" syrups. These syrups are made with a fruit base fortified with artificial color and flavor and by the addition of citric acid.

One ton of berries yields one pound of the substance which is the fruit element used in this fruit base. When this is diluted to the beverage strength, it is far from being real fruit. The ordinary consumer of such beverages thinks he is getting a real fruit drink, but he is not.

3. *Carbonated Fruit Beverages.*

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How to Handle Apples in Cool Storage

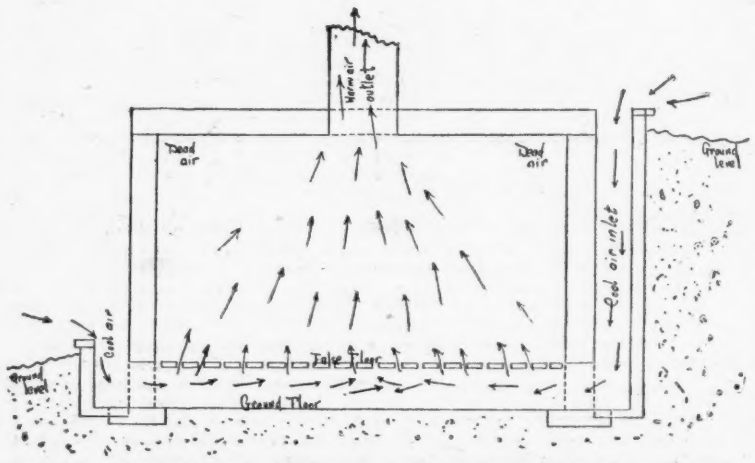
by C. E. Baker
Purdue Agricultural Experiment Station

THE NUMBER of cool apple storage plants is increasing each year. Many are being built on individual farms and a large number are being built in connection with community packing and marketing organizations. Increasing cold storage rates; lack of or inadequate cold storage facilities; development of local markets; and low fall prices in years of a heavy crop, have been among the direct causes for the increase of the number of common storage houses.

These cool storages have given varying degrees of satisfaction, depending upon the season, the details of construction and the attention to the principles of their operation. Often too much is expected of them, especially during the warm weather of early fall. Even under the most favorable conditions, they cannot be expected to compete with cold storage until equally low temperatures can be obtained. If the storage is properly constructed, and its limitations are fully realized, the remaining factor on which its success depends is that of intelligent operation. Even minor defects in construction can sometimes be overcome by proper operation. Many factors enter into the subject of successful operation of a cool storage. All of these, together with their relation to each other, must be thoroughly understood before the desired results can be obtained.

The Quality of Fruit to Store

The first essential in successful storage is good, sound fruit. To secure this, all possible care should be exercised during picking and grading. Fruit that is bruised, diseased, injured by insects, or has skin punctures from rough handling, is not only susceptible to storage diseases, but is likely to spread infection to the sound fruit. Such fruit should be stored for a short period only, and separated from the fruit that is to be stored for a longer time.



Section of cool storage cellar showing the natural path of circulating air, with the consequent formation of dead air spaces in the upper corners

The degree of maturity is also exceedingly important. Fruit should be picked for storage when it is "tree ripe," that is, when well colored, full grown, but still very firm. Immature fruit is more subject to scald, wilts badly and offers little resistance to decay. Over-mature fruit is subject to internal breakdown and becomes mealy in a comparatively short time. Most varieties are "tree ripe" when the seeds have become brown and when the fruit separates readily from the tree when the stem is bent upward.

Storage Factors

The three main prerequisites of a successful storage plant are: Low temperature, thorough ventilation, and moderately high humidity. In the common storage, temperature control and ventilation are so closely connected that they are inseparable, as temperature is regulated primarily by the circulation of air. Circulation is brought about by the difference in weight of cool and warm air. When the air inside of the building is warmer than the air without, the warm air will pass out through the outlet flues, permitting an equal volume of cold air to flow in through the cool air intakes. The fruit is cooled by the contact with the cold air which in turn is warmed, passes up through the outlet flues and permits the entrance of more cool air. It is necessary to watch carefully both inside and outside temperatures, and every opportunity should be taken to open the house when the outside temperature is lower than that inside the house.

In the fall months, the difference between day and night temperatures is often considerable. Under such conditions the house should be opened to its fullest extent during the evening and night, bringing in all the cool air possible. If the house has a large door opening directly into it from without, this can be used to supplement the air intake system, especially when the wind will blow directly in from that direction. If the house is equipped with fans for aiding the circulation of the air, these should be in operation. It must be remembered that a large volume of air is necessary to cool any considerable amount of fruit.

Just as important is the closing of the intakes and outlets as soon as the outside temperature begins to rise. In the early morning, before it has begun to get warmer, the house should be tightly closed, to hold the cool air stored up during the night. If the ventilators are not closed when the outside temperature begins to rise, the air will tend to circulate in the other direction, bringing the warmer air into the house and raising the tem-

(*Concluded on page* 14)

Present Status of Citrus Canker Problem

by George L. Peltier
University of Nebraska

ABOUT 10 years ago, the citrus industry of the United States, and particularly the Gulf Coast states, faced a situation of grave importance, which threatened to be as serious as the freezes of the late eighties. An unrecognized disease was rapidly spreading over the citrus belt of the Gulf Coast state through the medium of diseased nursery stock.

By 1914 the situation became so grave that immediate action was imperative. Through wise and hardheaded leadership on the part of several men, the situation was forcibly brought before Congress and the legislatures of the threatened states, and appropriations were authorized by Congress and a few states to eradicate this disease. A tribute should be paid to the men who were far-sighted enough to recognize this disease as one of major importance, for it was not until April, 1915, that the true cause of this disease was known.

Cause of Citrus Canker

What was this serious disease that caused the citrus growers so much concern, and where did it come from? The disease is known as citrus canker and is caused by a bacterium which is a "go-getter." Citrus canker attacks the leaves, young twigs, young fruits and even exposed roots of susceptible varieties. The disease appears as spots on affected parts and when numerous enough, causes defoliation, unmarketable fruit, and death of the current season's growth. It is ready to do business any time during the growing season. While it will not kill a tree in one or two years, defoliation and killing of the young twigs through a period of several years will so devitalize the trees as to predispose them to other diseases and unfavorable climatic factors so that in the end the trees are completely killed.

I stated that the bacterium causing the disease was a "go-getter." Let us see if this statement will stand. Under favorable conditions it can enter the leaf 20 minutes after coming in contact with it; in 48 hours you can see the spot forming; and in five to six days, the spots have broken open, exposing the bacteria formed in the canker and which are waiting for free transportation to another young part of the plant.

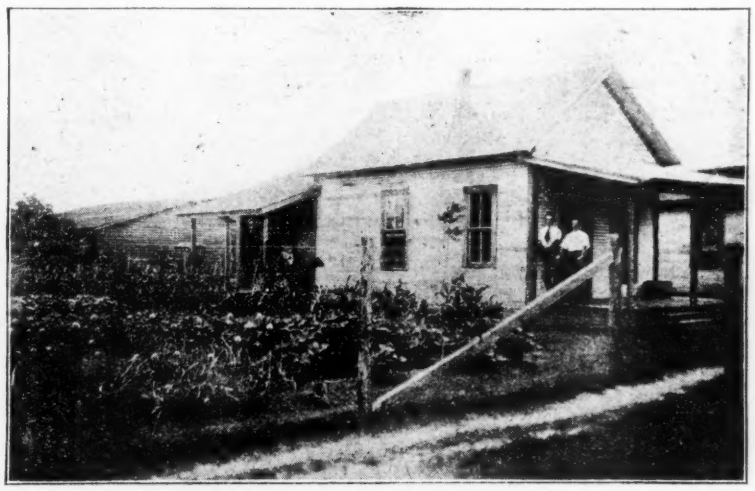
How Bacteria Multiply

These remarks are aside from the question, but have you ever stopped to figure out the problem of race-suicide in bacteria? Bacteria multiply by dividing. This division takes place in 30 minutes or less. If a division once every hour could be maintained for 24 hours, there would be produced, as the offspring of a simple bacterium, some 17,000,000 descendants.

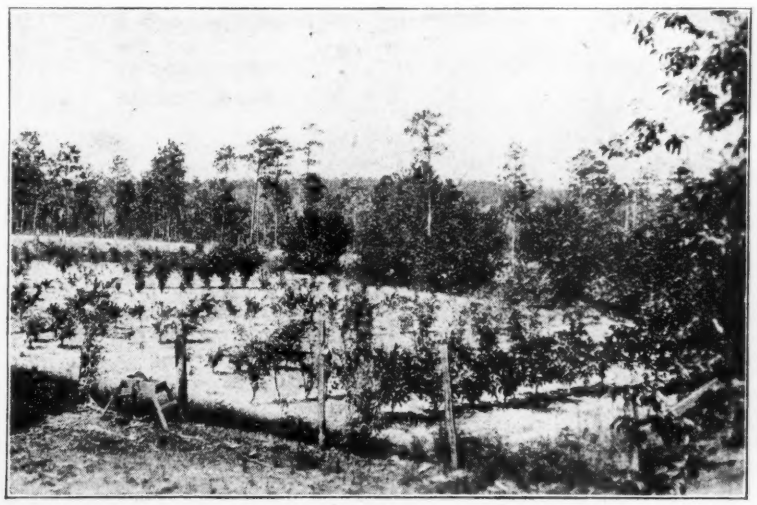
Citrus canker spots on leaves

It is a mighty good thing that bacteria are so small and that the death rate is extremely high. Do you wonder why a disease like citrus canker is a serious proposition?

Citrus canker was not recognized as a distinct disease in Japan until navel oranges were introduced from California about 1890. Over 20 years later, the same situation occurred in South Africa; canker was not recognized as such until grapefruit plants from Florida were introduced into South Africa. Mind you, this was before citrus canker was known to be present in the United States. In both countries it happened that the varieties of citrus they were growing were not very susceptible to canker, but when two susceptible varieties like grapefruit and navel oranges were introduced, the effects of the disease were very noticeable.



The field laboratory



The isolation test field

Canker Native to Japan

With the exception of the Far East, every report of canker to date can be traced back either directly or indirectly to Japan. Thus, it entered the United States through the Gulf Coast ports, probably beginning in 1910, on Satsuma and trifoliate orange stock and then was gradually spread, through the wide dissemination of diseased nursery stock. About this time the Satsuma industry was being rapidly pushed in Texas and other Gulf Coast states. California, through her efficient domestic and foreign quarantine laws, and possibly lack of demand for Japanese nursery stock, has been able to keep this disease out of her orchards.

Through state and national quarantine laws, the shipment of diseased nursery stock was quickly ended, so that the main source of dissemination was stopped. Further, all infected orchards were quarantined, so that early in the eradication campaign the spread of the disease by man was checked and only natural agents of dissemination had to be faced.

Conducting the Eradication Campaign

The eradication campaign was organized by states, with further subdivisions into districts and counties within the states. All inspectors were compelled to wear an outfit that could be easily disinfected, both on entering and leaving orchards. Further, all tools and equipment that were taken into orchards likewise had to be disinfected. After a thorough inspection, all diseased trees were tagged and finally burned, either with flaming oil or cut down and burned. Frequent inspections of quarantined orchards were made and when any new infections were found, the trees were burned. No orchard was freed from quarantine until it was absolutely certain that canker would not be found again. The final release from quarantine was a long procedure, taking a year or more and in some instances longer. You will say that this was a drastic procedure, especially in view of the fact that the grower received no compensation from any agency for the trees destroyed.

Drastic Measures Justified

Have the results of the last 10 years' eradication campaign justified the drastic procedure, both from the standpoint of getting rid of the disease and compensation to the grower of citrus for the loss of his trees? Allow me to quote a few statistics from the State Plant Board of Florida. Since May, 1914, canker has been found in 22 counties on 510 properties. Over 15,000 grove trees and almost 350,000 nursery trees have been found infected and destroyed. The number of trees found infected in 1914, 1915 and 1916 ran into the thousands. From 1917 on, with one or two exceptions which will be discussed later, the number of trees found infected has been dwindling down, so that in 1923, only 11 out of over 900,000 grove trees inspected were found infected. During the year 1922, an orchard in an isolated district was found badly infected, but this has been cleaned up, so that in Florida they have almost reached the point of finding the last canker on the last leaf of all the citrus trees in the state. Finding a needle in a haystack is an easier and more pleasant job than finding the last canker spot in Florida. However, until this is accomplished, eradication will not be successful.

Present Status of Infection

In Alabama the hurricane of 1916 spread canker far and wide, but by an uphill fight this handicap was overcome. The last figures available from Alabama show that for the year ending June 30, 1923, three properties with a total of 16 trees were found infected. A similar condition exists in Mississippi. The situation is such in Louisiana and Texas that it will be several years before the conditions which now exist in Florida and Alabama will be reached. This is due in part to the almost complete inaccessibility of the small plantings along the bayous in southern Louisiana and abandoned groves and nurseries in Texas, coupled with the lack of cooperation from some owners in both states.

Campaign Promises to Be Successful

The indications are that the citrus canker eradication campaign will be entirely successful. So far it is the only serious disease that has been introduced into the United States which has been so successfully fought to a finish. Of course, it has cost a tidy sum and much hard fighting to accomplish such a large undertaking. Has the cost of such a campaign justified itself? A hundred times yes, for if this disease had been allowed to go

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Effects of citrus canker on twigs

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The Child Labor Amendment

LAST spring Congress approved an amendment to the Constitution giving Congress "power to limit, regulate and prohibit the labor of persons under 18 years of age." This amendment is now before the states. If three-fourths of the state legislatures vote in favor of it, the amendment will become effective.

Some folks are claiming that labor on farms will be exempted, but this is untrue. All attempts to except child labor on the farms were voted down in Congress. The word "labor" was used instead of "employment," specifically to apply to children working without wages for their parents.

There appear to be two powerful groups who are promoting this amendment. They claim that their object is to protect children, but they undoubtedly have other objects in view as well. First, there are the Socialists who want to nationalize everything, including the education of children. Their ultimate object is to educate all children in community centers, as they do in Russia. Another powerful group with far-sighted policies wants to restrict the supply of labor so that wages can be kept high.

From a food producer's standpoint, the amendment is obnoxious. If the amendment becomes a law, a smart child could refuse to work on the farm and the government would protect him. Girls could reach legal age without doing any work for their parents. Fruit growers could not employ boys and girls under 18 for picking berries, apples and peaches if Congress used the authority given it. And if the amendment is passed, we may rest assured that the forces backing it will succeed eventually in extending the operation of the law to the labor of children on farms. Fruit growers will then be compelled to employ high-priced men and women for work that can be done better and cheaper by boys and girls.

One reason why agriculture is now suffering is because other great groups have gained special advantages for themselves through organized efforts and a consistent, consecutive program. Every time that one group gains a special advantage, society in general must pay for it, for there is only so much national income to go around, and when one group obtains more than its share in proportion to the service rendered society, others must receive less. Since agriculture is the one large group which until recent years has done nothing to protect its interests, it has been the chief sufferer. Because of the enormous value of agricultural products, agriculture could stand a lot of abuse in this direction, but the situation has now about reached the breaking point. The child labor amendment is only another step in the far-sighted program of other groups that will make things worse than they are for food producers.

Federal regulation of child labor is unwarranted, especially in agriculture and horticulture. Most states have good labor laws, and they can take proper care of this problem. If they cannot, there is small chance that the government can do it. Let the government enforce constitutional amendments now on the books before we give it any new jobs along this line. If we pass more amendments which are not enforced, people will lose the little respect for law and order which they still have.

If the amendment is passed, thousands of new offices will be established, thus adding greatly to the burdens of taxation. We shall have agents and clerks, most of them without children, running about the country bossing parents about the way they should raise their children.

No one loves children more than the writer, and no one is more anxious to see them well treated. The conditions prevailing in some factories are undesirable, but there are already laws which, if enforced, will handle this problem. We do not know of any child who was ever hurt by work on a farm. The work is healthful, conducive to normal development, and of varied nature. It is much better for a child to do such work than to do none at all or to loaf around in the city streets and alleys and learn bad habits and develop criminal tendencies.

The child labor amendment is not a good thing for agriculture, and every fruit grower who is alive to his interests will use his utmost influence to get his state legislators to vote down the proposed amendment.

Good Service by American Ships

BOTH the president and the general manager of Magazines, Inc., which publishes the American Fruit Grower Magazine, were obliged to make business trips to Europe this summer, and they used the vessels of the United States Shipping Board. So satisfactory were these experiences that we want to tell other Americans, who travel abroad, what they are missing when they fail to patronize the United States Lines. The boats in service are exceptionally comfortable, with good, roomy cabins and excellent meals, and every possible attention is shown to the passengers.

Why patronize foreign shipping companies when our own steamers offer first rate accommodations at moderate prices?

Our trips this summer took us through Great Britain, France, Belgium, Holland, Germany, Czecho-Slovakia, Poland and a part of Russia, and we are pleased to say that we found economic conditions everywhere (except in Russia) much closer to normal than has been currently reported. This is something which will be reflected in American business all along the line, from purchases of our agricultural products, including fruit, and our own domestic trade in machinery and supplies of every kind.

Not only is there optimism—and good reasons for it—in London, Paris, Berlin and other capitals, but conditions among all classes of population have so far improved that actual distress has largely disappeared. People generally in all countries are well clothed and have every appearance of being well fed. Restaurants and places of amusement, whether for rich or poor, are crowded to suffocation. Shops even in the smallest places are well stocked with both necessities and luxuries, and currency and prices have been sufficiently stabilized for domestic purposes. Buildings and streets are also being repaired, and a great deal of new construction is in evidence. In this respect there seems to be little difference between any of the countries mentioned. The improvement is practically universal, from London to Prague and Warsaw, and rural districts in most cases show real prosperity, although this will be set back again, to a considerable extent, by recent crop failures.

Industries are still slack, suffering from lack of liquid capital, high wages, taxes, governmental interference, etc., but they manage to keep going and are fundamentally sound. Railroad service is slow but generally good and the rolling stock has been put in excellent shape. Only the roadbeds show serious deterioration.

Germany is rapidly recovering and the mental state of the people impressed us very favorably. We talked with all classes, from lowest to highest, and got what we believe is an accurate cross section of their sentiment. Except for the old governmental and military caste, their principal desire is to be at peace with the rest of the world and to be let alone to work out their own salvation. The Dawes plan is generally approved, not as admittedly equitable to them, but as probably the best terms obtainable and as a means of stabilizing the economic situation within Germany itself.

The importance of all this to Americans is plain. Agricultural distress in the United States was largely brought about by the collapse of buying power abroad, and the contrary effect will be created by the resumption of food purchases, including fruit, on something approaching the old scale. This, in turn, will be reflected in expenditures of all kinds by our rural population, county and town governments, etc.

In the marketing of fruits grown in Europe the idea of co-operative grading, packing and shipping is taking hold, and a model station for the purpose—the first in Great Britain—was recently opened at Cottenham, England. The Federation of British Growers have also adopted diagonal pack and the "British Standard" box, which is of the same dimensions as the Oregon box.

The handling of American fruit abroad leaves much to be desired. Facilities for getting this fruit across the ocean to the larger cities of Great Britain and the Continent appear to be good, including refrigeration, and the service of the United States Shipping Board vessels as far as the ports of unloading is among the best, but, as in America, the movement appears to be hampered beyond the larger concentration points. Refrigeration service, also, is not so well developed there as in the United States.

Selecting an Orchard Site

AT THIS time of the year, as we drive across the open country, it is easy to understand the differences which locations make in the success of an orchard. In the evenings, the air in low places is distinctly cooler than that on the higher spots. There is more movement of air on the high than on the low land. Early frosts often kill tender crops on low ground, while those on high ground escape. Crops on high ground nearly always have a longer season in which to grow than crops on low ground.

All these differences, of course, are due to the fact that cool air occupies less space than warm air, and being heavier, it settles to the lower places, leaving the warm air to occupy the higher land. Keep these things in mind when selecting an orchard site. They will help you to secure better and surer crops of fruit.

XUM

Tree Surgery for the Fruit Grower

by Paul Thayer
Pennsylvania State College

THE FIRST two words of this title were assigned to me, the remainder I took the privilege of adding, for I have no desire to discuss tree surgery such as is used to save precious old trees which beautify and adorn the home grounds or which are treasured for their sentimental or perhaps historic value. This should be left to the professional tree surgeon with his chisel and mallet, his concrete and tin and asphaltum. When the sentiments are concerned, commercial values disappear, for who yet has been able to measure the cash price of the higher emotions?

I shall limit myself to a discussion of the operations, both preventive and remedial, which can and should be performed in our orchards and which may be entered in cold hard cash on the debit side of our books, with a fair assurance of a corresponding credit entry. This is a distinct province from "tree surgery," as the term is commonly used, and while there are some practices equally adaptable to both, I have seen tree surgeons make as sorry a job of orchard surgery as I could make in tree surgery.

We hear much these days concerning preventive medicine, and a little about preventive surgery. It would seem to me that a consideration of tree surgery should include at least a reference to the factors which produce a need for tree surgery, as well as an outline of the means whereby this need may be reduced to the minimum.

Few people who plant a tree or an orchard do so with any realization or thought of the future. Apple trees are planted 25 or 30 feet apart, as though their span of life were only a score of years, and then are cared for in such a manner that when they have borne a few crops of fruit they break down and are lost. Why spend a dozen years building a tree and then throw it away after it has borne a few crops of fruit? A Rhode Island Greening tree, supposed by some to be the original, bore fruit when it was almost 200 years old, and another tree of the same variety was cut down at the age of 141 years; and yet there are many orchards today of trees 15 or 20 years old in which each year an increasing number of vacant spaces bear testimony to lack of proper surgery, both past and present.

There is a persistent tendency to draw comparisons between vegetable and animal life and to be governed in our thinking by these comparisons. It is this erroneous thinking that leads the man who has been vaccinated for smallpox to fall a ready victim to the quack who sells him a preparation to inject into his trees. Vegetable and animal life do not flow in similar channels, except in the lower forms. In the higher forms, as between human beings and fruit trees, the analogies are few.

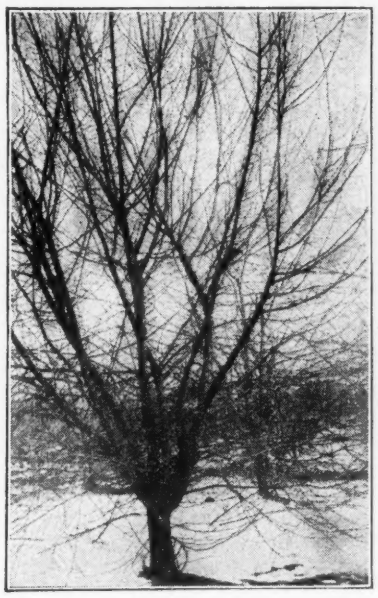


Fig. 1—Peach tree with too many branches

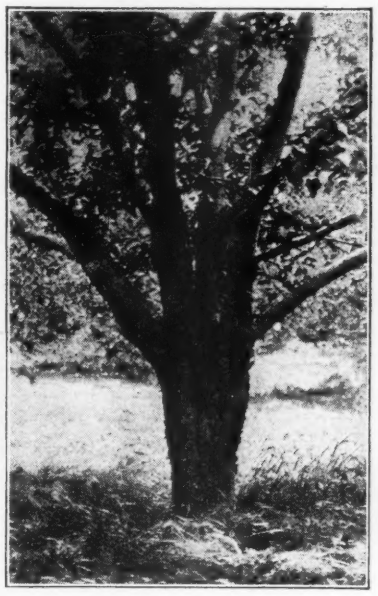


Fig. 2—Apple tree with bad crotches

No Life in Heart Wood of a Tree

There is one fact which, if kept clearly in mind, would help us much on preventive surgery, and that is that there is no life in the heart wood of the tree. This simple fact has two bearings on orchard surgery. In the first place, the fact that the heart wood is dead means that it has lost the power of growth or change; it means that branches, whose centers are four or six inches apart when the branches are an inch in diameter, are touching when they become six inches in diameter. It is not an extremely rare sight to see a tree in which a limb, in growing between two other limbs, actually splits them apart.

Two-year-old apple trees as they come from the nursery usually have all the limbs removed to a height of 20 or 24 inches, with the tree headed at 30 or 36 inches. In that six to 12 inches of space arise a dozen or more branches, of which we leave from three to eight. The tree shown in Figure 1 contains, for example, at least eight branches. The future of such a tree can be easily foretold. Unless protected, the first heavy crop will destroy it. Figure 2 shows very clearly what happens to the trunk when three or four large branches originate at about the same point on the trunk.

Branches Should Be Well Spaced

When we go to an old orchard and look at the old trees which have stood the stress and storm of decades, what do we find? We find a few main limbs, perhaps three or four, originating not several inches apart, but several feet apart. Let us take a lesson from these old veterans and so form the branches of the young trees as to make for structural strength and longevity.

(*Continued on page* 16)

Rambles of a Horticulturist

by C. E. Durst

CONTINUING the New England tour, the next state visited was New Hampshire, the first stop being made at the orchard of E. N. Sawyer, Salisbury. Mr. Sawyer has the reputation of being the most successful fruit exhibitor in New England. His soil seems particularly adapted for the production of high-colored fruit. He had a fairly good crop on the trees in spite of this being the off season. He practices sod mulch culture, leaving the clippings on the ground. Some nitrate is used, but apparently not enough, for the trees do not seem to be making a sufficient growth for the best results. In one orchard the trees are planted 20 by 20, the varieties being Baldwin, Wagener, Wealthy and McIntosh. Mr. Sawyer intends to remove all but the Baldwins after the fillers have borne 10 to 12 crops, thus leaving the trees 40 by 40 feet. Mr. Sawyer uses a dormant spray and two to three summer liquid sprays. The farm was established in 1783 by Mr. Sawyer's great grandfather, and the house is cited in early New England histories.

The Shugrue orchards at Webster were next visited. The sod mulch system is being practiced, all clippings being placed under the trees. Nitrate of soda is used. Dr. Sax and the writer were particularly interested in two Gravenstein trees 10 years old, standing side by side, which, according to Mr. Shugrue, had received identical treatment. They were apparently healthy, though one of the trees was a great deal larger than the other, as shown by the picture. The difference may be due to difference in root stocks. Mr. Shugrue sells no fruit in the fall. All of it is trucked to Boston, stored over winter and sold in the spring.

Short stops were made at the Gould and Shreve orchards, Hopkinton. The latter orchard, located on a mountain top, afforded an excellent view extending for from 25 to 100 miles in different directions. Mr. Gould planted his orchard after he was 40 years old, 23 years ago. The trees are now in splendid condition and bearing well.

Stops were made at the orchards of Fred Russel, Harry Chase, Fred and Elmer Parker, near Lyndeboro, and those of George Kelley, P. C. Baker and C. E. Hardy near Hollis. Mr. Chase has practiced sod mulch culture in one orchard for 18 years. The older trees receive 12½ pounds of nitrate annually. The clippings are left under the trees. A dormant spray, a calyx spray and one summer spray are used on the Baldwins. The McIntosh receives four to five summer sprays. A dust spray of dry lime sulphur and lead had caused injury.

The orchard of C. E. Hardy showed remarkable condition. Mr. Hardy uses a dormant spray every two years and only a few summer sprays, the number varying according to conditions. He has some nice strawberries between young trees. The McIntosh is preferred by Mr. Hardy, as well as by most other New Hampshire growers.

The New Hampshire people have an interesting trespass law which provides that persons trespassing on farms and taking or damaging fruit, etc., may be fined or imprisoned. The growers feel this law was badly needed because of the acts of tourists and city people.

A movement is on foot for the establishment of a co-operative at Wilton and keen interest is being taken in the venture. A building near the depot will probably be used as a packing house.

Eight-year-old apple orchard of George A. Dascom, Westminster, Vt.

The Dascomb Orchard

The day in Vermont was spent at the orchard of George Dascomb at Westminster, of which J. W. Collins is manager. This orchard, part of which is 12 years old and part eight years old, is in wonderful condition. There are 12,000 trees in all, 7500 of which are McIntosh. The trees are of large size for their age. Besides using other fertilizers, Mr. Dascomb uses equal parts of nitrate of soda and sulphate of ammonia at the rate of one-fourth pound per year for each year of age of the trees. For example, an eight-year-old tree receives two pounds. It seems that the trees are growing a little too vigorously just now for the best fruiting results.

The trees were set 20 by 20 feet and now need thinning badly, especially the older ones. No dormant spray is being applied, but six summer sprays of commercial lime sulphur, lead and spreader were applied this season. The fruit was remarkably clean and of excellent finish. The modified leader system of pruning is followed. Mr. Dascomb has an excellent packing house equipped with a Cutler grader, roller carriers and other facilities for efficient work. Part of the house is

(*Continued on page* 12)

Development of Fruit Growing in Canada

by J. S. Shoemaker

University of Minnesota

TO THE north of the United States lies a nation that has established fruit districts and traditions rivaling in certain ways those of this country. Not only is the development of fruit growing in Canada similar in many respects to that of the United States, but because of the contact between the two countries of commercial and professional men, tourists and settlers, a knowledge of the horticultural history and organization may serve to advantage.

The present status of fruit production in Canada may be obtained from the records of the Dominion Bureau of Statistics. The products and values of Canada in 1923 are as follows:

Class.	Quantity.	Value.
Apples, bbls.....	4,063,719	*
Pears, bus.....	227,335	$ 550,587
Plums and prunes, bus.....	348,482	696,964
Peaches, bus.....	403,660	916,050
Apricots, bus.....	32,850	.....
Cherries, bus.....	203,125	722,440
Strawberries, qts....	8,652,200	1,513,230
Raspberries, qts.....	4,496,840	1,044,000
Other berries, qts...	2,527,700	494,691
Grapes, lbs.....	42,185,077	2,742,030

*Not yet estimated.

The total estimated value of commercial fruit products of Canada, based on average wholesale market prices, is $45,262,788 for 1921 and $33,899,121 for 1922. By provinces, the total values in 1922 are:

Ontario	$14,295,140
British Columbia	9,181,902
Nova Scotia	7,947,118
Quebec	1,579,368
New Brunswick	895,593

A large proportion of the fruits of Canada are exported, Montreal and Halifax being perhaps the two chief ports.

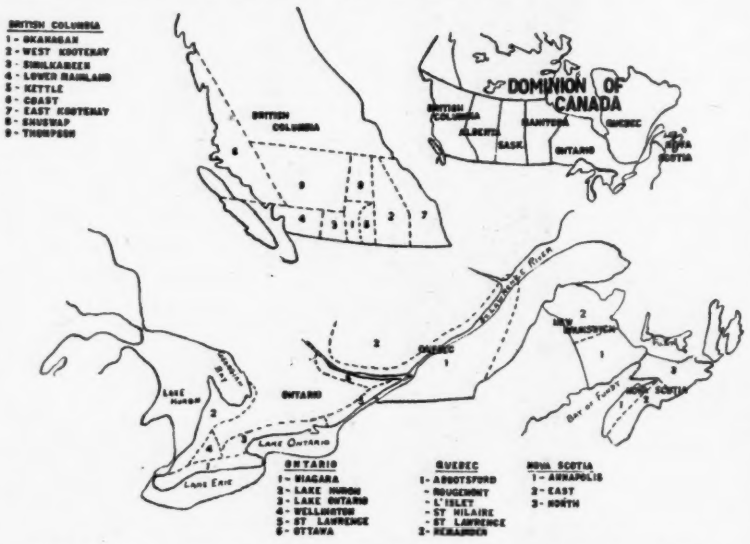
Fruit Districts

The fruit districts of Canada, numbered by provinces in approximate order of importance, are shown on the map. The three chief ones are the Niagara of Ontario, the Okanagan of British Columbia and the Annapolis of Nova Scotia. Climatic conditions vary greatly in these three chief districts, and throughout the Dominion. In general, the main fruit districts are found bordering on bodies of water. However, the Okanagan is inland in British Columbia, where irrigation is an important factor.

Tender fruits, such as peaches, apricots, grapes and prunes are grown commercially in favorably located sections. Of course in the colder districts, some of these do not succeed and are replaced by more hardy sorts.

In Ontario, the varieties of apple commonly found are Northern Spy, McIntosh, Snow, Baldwin, Rhode Island Greening, Golden Russet and Wagener. British Columbia as main sorts has Jonathan, Winesap, Delicious and McIntosh. Nova Scotia is partial to the growing of Gravenstein, King, Ribston, Stark, Spy, Wagener and Cox Orange. Quebec may be remembered as the home of the Fameuse or Snow.

Outside of the main districts where climatic conditions are not as favorable, resort is taken to more hardy varieties, such as Duchess, Wealthy, Yellow Transparent and many other Russian sorts.



Fruit districts of Canada by provinces, in approximate order of importance

Sources of Fruits

The apples of Canada of today may be traced to the following sources: 1—Early French settlers and missionaries; 2—English colonists; 3—introduction of seeds and trees from Virginia and New England; 4—United Empire Loyalists; 5—European fruits; 6—chance seedlings; 7—systematic breeding, and 8—recent introductions from the United States.

The early French settlers and priests had much to do with the introduction of fruits to Canada, particularly to the Province of Quebec. The first settlements in Quebec were made near the beginning of the Seventeenth century, and it is certain that in 1663, apple trees were growing in this province. Canada has no native apples trees of her own so all necessarily were due to introductions. The settlers planted seeds from France, and from the trees which grew, seeds were again planted, the while the same name of variety being maintained. Naturally it was found that soon these varieties were different from those of the same name in France.

The French settlers also were among the first fruit growers of Nova Scotia, or Acadia as it was then known. In 1761, when settlers came from New England, they found bearing trees. To the English colonists are due the introduction into the Maritime Provinces of many of the commercial varieties of today. The export of apples to Britain began in 1875.

In Ontario some giant pear trees planted in 1705 are found located on the banks of the Detroit river. Apple orchards were planted in that district in 1784, and vineyard development started in 1860. Following the settlement of the Essex region is the beginning of the noted Niagara Penin-

(*Concluded on page* 14)

Rebuilding the Gulf Coast Citrus Industry

by O. F. E. Winberg

IN 1915, with the aid of the Bureau of Plant Industry of the Federal Department of Agriculture and the Horticultural Department of the Alabama Polytechnic Institute, the Gulf Coast Horticultural Society began a systematic campaign to produce better fruit. As in all new fruit industries, the growers did not realize the necessity of spraying as a factor in the production of quality fruit. The importance of spraying could not be brought home to the growers without actual demonstrations that the trade and consuming public are not keen on buying fruit of poor appearance. We often hear growers make the statement that russet fruit tastes better than bright fruit and that the fruit injured by sour scab, scale insects or melanose disease tastes equally as good as fruit not having these defects. They often fail to realize that the success of fruit production, as well as other businesses, does not lie so much in what the producer thinks of its quality as in the judgment passed thereon by the trade and consuming public. The only way to bring home this lesson is by actually showing the result of marketing of first-class fruit with attractive appearance as compared with that of the third and fourth grades.

Spraying Conserves Vitality of Trees

The records of the Gulf Coast Citrus Exchange, covering a number of years, show that the difference in price to the growers is 70 cents per box higher for first-grade fruit than for third-grade fruit. In addition, it is a fact that when the trees are improperly sprayed and are covered with scale insects, rust mite, white fly, and diseases such as melanose and sour scab, the quantity of fruit produced is decidedly reduced. Persistent and consistent efforts in calling the growers' attention to these facts, and sprayer demonstrations have made it possible to introduce systematic spraying in the Satsuma belt on the Gulf Coast, so that in recent years there has been an increase in the first-grade fruit and a substantial decrease in the third and fourth grades. The control of insect pests and diseases has resulted in increased production.

The loss of vitality of the tree, due to insect pests, was well demonstrated in January, 1924, when a cold wave swept over the Gulf Coast territory. The actual temperature in the orchards went down to 10 degrees Fahrenheit above zero. Trees devitalized as a result of insect pests suffered far more severely than trees properly sprayed. It is true that some well-cared for orchards suffered severely. It was apparent, however, that if all the orchards had been neglected as to insect and disease control, the fruit industry on the Gulf

(*Concluded on page* 24)

Effects of various treatments in Satsuma orchards. Left—No fertilizer or spraying. Center—Clean cultivated and properly sprayed orchard, fertilized with manure and commercial fertilizer. Right—Properly fertilized, sprayed and cultivated orchard, with cover crop of cowpeas

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The Usco Cord comes in 30 x 3 inch and 30 x 3½ inch clincher; and 30 x 3½, 32 x 3½, 31 x 4, 32 x 4, 33 x 4 and 34 x 4 inch straight side.

United States Rubber Company

Directions for Making Lime-Sulphur Solution

WITH the approach of winter, many growers are beginning to plan for the winter spray for San Jose scale. There are a number of commercial preparations which will control scale, such as Scalecide, lime-sulphur solution and commercial oil emulsions. However, there are many growers who desire to make their own materials for scale. In another article, directions are given for making oil emulsion. The following directions, taken from Illinois Circular 277, give information on the preparation of home-made lime-sulphur solution:

Formula for Home-Made Lime Sulphurs

The 50-Gallon Formula

100 pounds ground sulphur.
50 pounds lump lime.
50 gallons water.

The 66-Gallon Formula

100 pounds ground sulphur.
50 pounds lump lime.
66 gallons water.

The 50-gallon formula is more generally used. The 66-gallon formula, however, is somewhat more economical of sulphur.

Lime sulphur is prepared by cooking the ingredients together until practically all the free sulphur has dissolved, a process which requires approximately 45 minutes. When the spray is made in large quantities, the cooking is usually done with live steam. With smaller quantities, it is more often done in kettles over a fire.

Directions When Cooking Is Done with Live Steam.—Provide two large tubs by cutting a large cask across the middle. Before cutting, draw two stout wires around the middle of the cask about two inches apart, and cut between them. Staple the wires in place to act as top hoops for the tubs. Bend a piece of one-inch gas pipe into nearly circular form, so that it will lie on the bottom of the tub. Cap one end, drill one-eighth inch holes at intervals of four inches to permit the escape of live steam, and attach the other end to a steam feed pipe leading from a steam boiler. Various systems of elevated platforms may facilitate the work, but the use of these depends upon the arrangements in the individual cooking plants.

A mechanical agitator must be provided which will keep the solution stirred constantly from the beginning to the end of the cooking. A good form of agitator is made to work with sweeping arms, rotating on a shaft placed in the center of the tub To a in agitation, boards can be fastened to the tub, projecting toward the center. The agitator works on the bottom of the tub underneath the screen, which is described later.

A large-sized spigot, through which to run the solution from the tubs after cooking, should be provided on one side near the bottom.

Three inches from the bottom of the tub, supported by wooden blocks at the outer edge and by the gitator bearing in the center, place a screen of half-inch mesh of No. 9 wire cut to fit the tub snugly at the point where the screen rests.

Depending on the size of the tub, quantities of from 50 to 200 gallons may be made at one time. Either he 50-gallon or the 66-gallon formula may be used; the former is customary. To make a lot of about 50 gallons by this formula, place 50 pounds of fresh, unslaked lump lime on the screen near the bottom of the tub, and pour in sufficient water, preferably hot, to start the lime slaking. When it is slaking freely, pour in 100 pounds of sulphur and add enough water, preferably hot, to bring the total volume up to 40 gallons. Turn on the steam and cook until the free sulphur has disappeared. The condensing steam will gradually increase the volume. The final volume will be influenced by the initial temperature of the water, the temperature of the steam turned in and the thoroughness of the agitation. On this account, the final product should be tested with a hydrometer. It should have approximately the density indicated for the 50-gallon formula in the table. The clear lime-sulphur solution may be stored in large casks, barrels or tanks, until needed.

Directions for Making Over a Fire.—When lime sulphur is cooked over a fire, the following directions will be found practical. Either the 50-gallon formula or the 66-gallon may be used. Place in a large kettle over a low fire 15 gallons of water and 50 pounds of good lime free from air-slaked particles. When the lime is slaking vigorously, pour in 100 pounds of ground sulphur and mix thoroughly with the lime. Gradually add sufficient water to prevent the lime from drying out during the process of slaking. As soon as the lime is thoroughly slaked and the sulphur thoroughly mixed, add enough wate to bring the total volume to either 50 gallons or 66 gallons, depending on which formula is being used. Boil for about 45 minutes, adding enough water from time to time to keep the volume at or above 50 or 66 gallons, depending on the formula. For mixing in this way, a 75-gallon feed cooker has proved convenient.

Dilutions Used.—The above table shows the dilutions to be used with different lime-sulphur concentrations.

DILUTION TABLE FOR LIME SULPHUR

Degrees Baumé	Specific gravity	Amount of lime-sulphur solution to be used in making up 50 gallons of diluted spray. For dormant spraying gallons	pints	For summer spraying gallons	pints
20	1.1600	11	6	2	2
21	1.1693	11	–	2	2
22	1.1788	10	4	2	-
23[3]	1.1885	10	–	1	7
24	1.1983	9	4	1	6
25	1.2083	8	6	1	5
26	1.2184	8	–	1	4
27	1.2288	7	4	1	3
28[2]	1.2393	7	1	1	2
29	1.2500	6	6	1	2
30	1.2608	6	4	1	1
31	1.2719	6	1	1	1
32	1.2831	5	6	1	0
33[3]	1.2946	5	4	1	0
34	1.3063	5	2	–	7
35	1.3181	5	–	–	7

[1] Approximate strength of lime sulphur made by the 66-gallon formula.
[2] Approximate strength of lime sulphur made by the 50-gallon formula.
[3] Standard commercial.

Note.—Since the strengths of the solutions made according to the 50-100-50 and the 50-100-66 formulas, and also of the commercial lime sulphur, are only approximately those indicated by notes 1, 2 and 3 in column 1, it is suggested that the orchardist test his solution with a hydrometer, so that in making up 50 gallons of spray he can use exactly the number of gallons of lime-sulphur solution indicated in the table for a solution of that particular density. (A hydrometer is a weighted glass bulb with a long stem on which densities are indicated in specific gravity or degrees Baumé or in both. The test is made by floating the hydrometer in the solution.)

Formula for Grafting Wax

FOR THE benefit of the readers, I give you the formula of a grafting wax I have used for a good many years and which I have found better and cheaper than any other I have ever tried. I make it in four grades, to use according to the weather. If cold or early in the season, as when cherries have to be grafted, or cold or cloudy, I use the soft wax. If hot, so that the softer grades stick to my fingers in spite of the linseed oil I put on my hands, I use the harder grades. When working any distance from home, I always carry the four grades with me so that I always have a wax that will work well in spite of the weather.

Directions for Making Wax

Melt six pounds rosin and one pound beeswax over a slow fire in an old iron pot. After it is melted, add linseed oil and stir to mix well before pouring into water.

Use the following proportions of linseed oil: For soft wax, one quart; for medium soft, one and one-half pints; for medium hard, one pint; and for hard, one-half pint.

When cold enough to take out of the water, I simply shape the wax like doughnuts and put it in different colored paper so I can tell the different grades when mixed in one basket. After setting scions and waxing the limbs, I always use a strip of an old rag. Put a small piece on top to protect the wax from the sun and wind, and a narrow strip down the side to prevent the bark from peeling when the sap starts, which it will do if not wound.—*J. J. Schwenk, Connecticut.*

October Crop Report

THE OCTOBER crop report of the United States Department of Agriculture for fruits is as follows:

	Forecast. Oct. 1924.	Sept. 1924.	Harvested. (All figures given in millions.) 1918—22 1923.	Avge.
Apples, total, bus.	175.	179.	197.	167.
Apples, commercial, barrels	26.9	28.1	34.3	27.7
Peaches, total, bushels	51.7	51.7	45.7	44.1
Pears, bushels	17.6	17.3	17.4	15.4
Grapes, tons	1.66	1.78	2.01	....
Cranberries, bbls.	.530	.541	.610	.459

October Crop Report for Apples

THE OCTOBER crop report of the Department of Agriculture registers another decrease in the estimated production of commercial apples. The crop is now estimated at 26,942,000 barrels, which is a decrease of 1,159,000 barrels since September 1 and a decrease of 7,461,000 barrels as compared with the 1923 crop, which amounted to 34,403,000 barrels. During the past month losses were shown in Washington, New York, Virginia, West Virginia, Ohio and Michigan, the largest decline being in Washington.

The total or farm crop of apples is estimated at 174,842,000 bushels, compared with 196,770,000 bushels in 1923. The estimate of the commercial crop on October 1 and the production for 1923 by states are given in the following table:

	Cond. Oct. 1.	Oct. 1, est. bbls.	1923, Dec. rep. bbls.
Maine	63	593,000	425,000
N. Hampshire	75	255,000	120,000
Vermont	75	153,000	89,000
Massachusetts	70	654,000	500,000
Rhode Island	68	60,000	50 000
Connecticut	65	188,000	160,000
New York	51	3,729,000	3,900,000
New Jersey	61	.....	470,000
Pennsylvania	40	811,000	1,266,000
Delaware	65	307,000	340,000
Maryland	42	249,000	460,000
Virginia	58	2,210,000	1,850,000
W. Virginia	50	1,004,000	1,350,000
N. Carolina	86	311,000	100,000
Georgia	70	92,000	.....
Ohio	47	668,000	1,033,000
Indiana	37	127,000	300,000
Illinois	52	801,000	1,351,000
Michigan	45	1,363,000	2,118,000
Wisconsin	54	88,000	136,000
Minnesota	58	37,000	61,000
Iowa	64	96,000	188,000
Missouri	50	572,000	850,000
Nebraska	72	136,000	103,000
Kansas	74	465,000	400,000
Kentucky	81	179,000	70,000
Tennessee	79	85,000	30,000
Alabama	68	.....	12,000
Texas	63	.....	15 000
Oklahoma	76	46,000	42,000
Arkansas	66	799,000	656 000
Montana	35	80,000	123,000
Colorado	72	779,000	803 000
New Mexico	55	157,000	315,000
Arizona	50	8,000	14,000
Utah	60	164,000	260,000
Idaho	400	700,000	1,600,000
Washington	49	5,651,000	9,198,000
Oregon	70	1,401,000	1,750,000
California	64	1,460,000	1,732,000
U. S.	53.9	26,942,000	34,403,000

Canadian Apple Crop

THE CANADIAN Department of Agriculture on October 1 issued the following figures which show the estimated Canadian apple crop by provinces for 1924 and the production for 1923:

	1924.	1923.
New Brunswick, bbls.	86,615	69 292
Nova Scotia, bbls.	1,274,742	1,821,064
Quebec, bbls.	87,876	65,094
Ontario, bbls.	913,080	1,304,400
British Columbia, boxes.	2,590,000	3,700,000

Mid-West Horticultural Exposition

THE FIFTH Mid-West Horticultural Exposition will be held in Waterloo, Ia., November 11 to 16, 1924. As usual, the show this year will be held in connection with the annual meetings of several horticultural organizations in Iowa, and, as in past years, it is planned this year to make the exposition an outstanding event in Middle West horticulture.

The exhibit this year will include fruits, vegetables, flowers, nursery products and horticultural supplies of all kinds. It will be held in the Hippodrome building at the Dairy Cattle Congress grounds at Waterloo, which will furnish ample room for the exposition and meetings.

Competition in the exposition will be open to all fruit growers in the Middle West, including the territory between Pittsburg, Pa., and Denver, Colo., and from the Canadian line to Oklahoma, Arkansas and Tennessee, inclusive. The entry lists show that liberal prizes will be awarded to the winners.

The exposition is an excellent place at which to exhibit horticultural products and supplies of all kinds, and growers and supply companies who are interested should write R. S. Herrick, secretary, State House, Des Moines, Ia., for a copy of the rules and regulations governing the exhibits.

The following horticultural organizations will hold their annual meetings in connection with the exposition:

Iowa State Horticultural Society, November 13 and 14.

Society of Iowa Florists, November 12 and 13.

Mid-West Beekeepers, November 12 and 13.

Iowa Vegetable Growers' Association, November 13 and 14.

Iowa Fruit Growers' Association, November 14.

Iowa Nurserymen's Association, November 14.

A joint banquet of members of all societies and of all others present will be held on Thursday evening, November 13.

Middle West fruit growers will find it to their advantage to attend this meeting. The exhibits themselves have great educational value and are worth going a long way to see. In addition, there will be many good meetings at which addresses will be given by many of the best horticultural authorities in the country. Thus the meetings and exposition will provide an opportunity for learning the latest and best developments in fruit growing. The hotel facilities at Waterloo are reported to be excellent and the prices reasonable.

WE THOUGHT that Californians had already exhausted the supply of brand names like Sunkist, Sun-Maid and Sunsweet, but now along comes the California Olive Growers' Association with Sun-Ripe as a trade name. It is an excellent name and ought to bring good results. The olive growers are to be congratulated on their choice.

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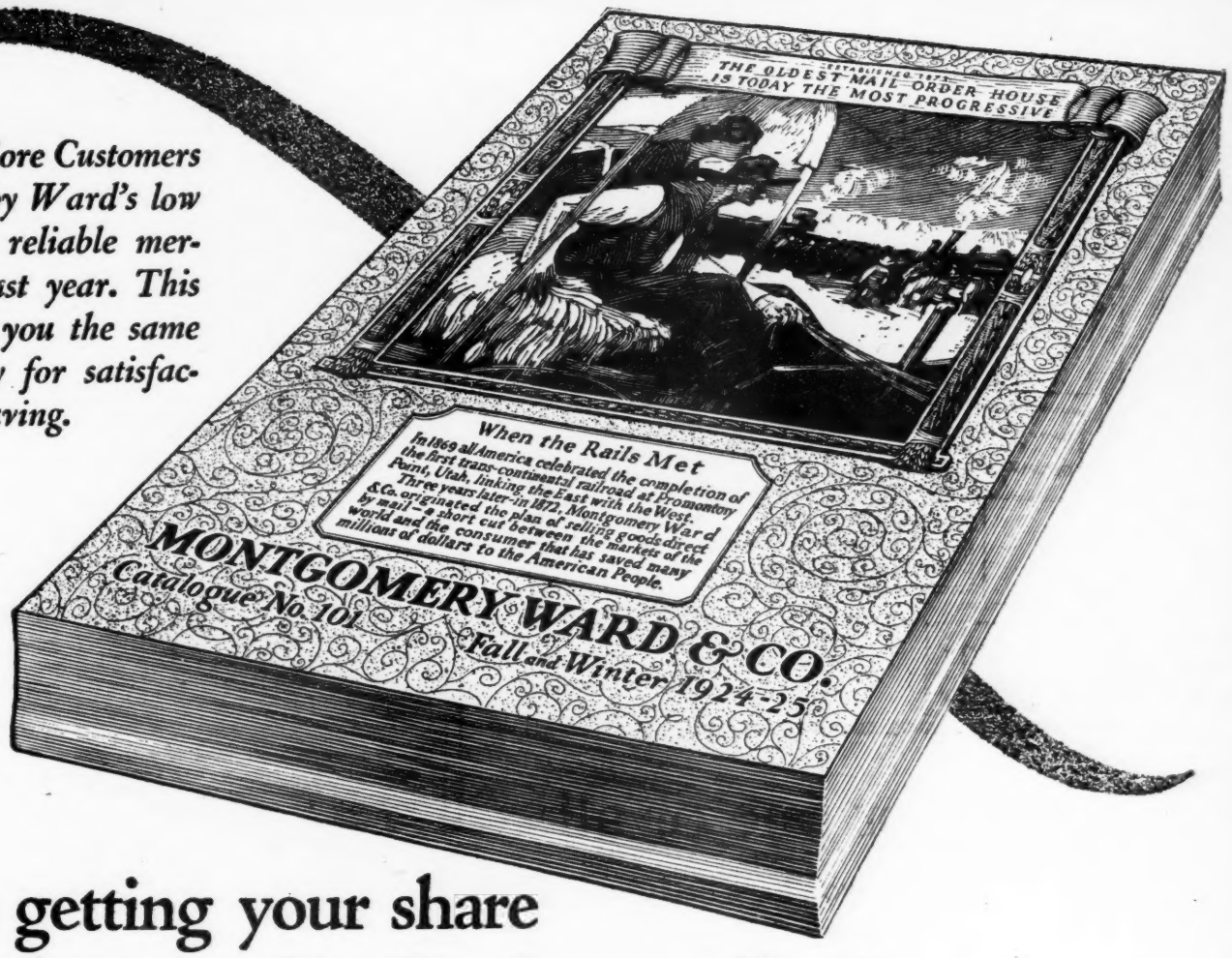
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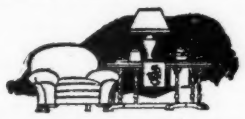

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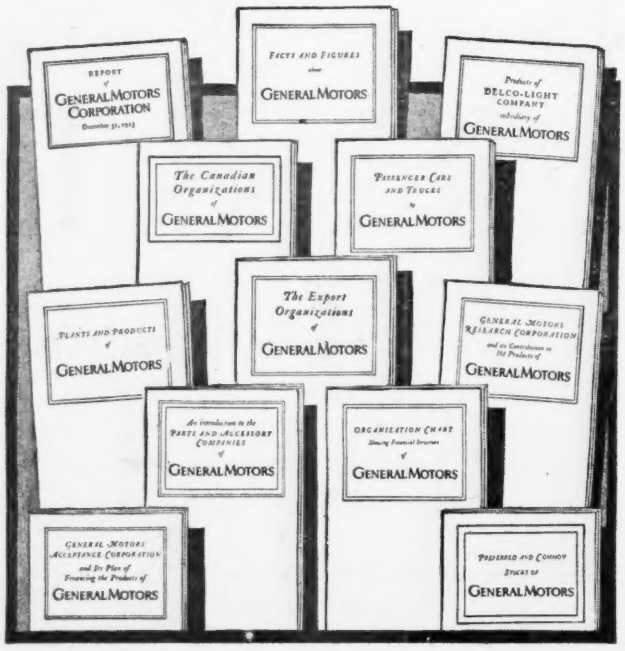
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FACTS AND FIGURES about GENERAL MOTORS
Products of DELCO-LIGHT COMPANY subsidiary of GENERAL MOTORS
The Canadian Organizations of GENERAL MOTORS
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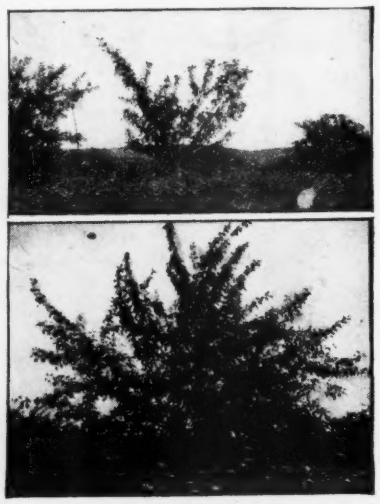
Rambles of a Horticulturist

(*Continued from page 7*)

given over to a cool storage plant. The crop is marketed in barrels and standard bushel boxes.

A hurried inspection was made of the Scott farm orchard, Brattleboro, owned by H. C. Holbrook. The place was formerly a dairy farm. The orchard consists of about 4500 trees. The McIntosh is the leading variety, with Spy next in order. On this place we saw probably the best finished and



Two Gravenstein apple trees 10 years old, apparently free from root or trunk diseases, and which have received identical treatment. The difference may be due to root stocks. (John Shugrue orchard, Webster, N. H.)

best colored Duchess found in New England. A considerable quantity of top-working has been done. The place has a well-arranged and well-equipped packing shed and a very complete cold storage plant. Of particular interest were the packages, egg case style, used to market the high-class McIntosh and other late varieties. The writer wonders if this package does not fill the long-felt need of a package for high-class fruit that goes directly from the producer to the consumer without change. The party was hospitably taken care of over night at this place.

Western Massachusetts

The party succeeded in overtaking the western Massachusetts tour at the orchard of Abbot Howes, at the head of Apple Valley, where an excellent basket lunch was served and talks were made by a number of persons. The tour ended on Saturday, August 23, at Amherst, where the orchards of the Agricultural Experiment Station and of several growers in the vicinity were visited.

Summary of New England Tour

The topography of the land is quite variable in New England. Most of the orchards are on the higher land. There is plenty of opportunity for air drainage. A lot of good orchard land is still available and can be purchased at low prices.

Apples are grown all over New England. A fairly wide assortment of varieties can be grown in southern New England, but only a few varieties succeed well in Maine, New Hampshire and Vermont. McIntosh is the most popular variety all over New England. It is very hardy and the fruit is of excellent quality and is popular on the market. It matures a little early, however, and the skin is a little tender for easy handling. The Cortland, a cross between Ben Davis and McIntosh, developed by the New York Agricultural Exjeriment Station, is somewhat later than McIntosh and the fruits are larger, they keep longer, and they have a brighter color. This variety is being watched with interest. The Baldwin does well in southern New England, but is not hardy in wood or bud in northern Maine. Spy and Delicious are quite hardy but often lack sufficient color. Golden Delicious apparently does well, but since the New England markets prefer a red apple, a demand will have to be created for this variety. Other varieties grown are Duchess, Gravenstein, Greening, Wealthy, etc.

Pears are grown to considerable extent in lower New England but very little in the upper states. Peaches are grown in considerable quantity in southern New England, but practically not at all in Maine, New Hampshire or Vermont. Elberta is the principal variety, though many early varieties are grown. Small fruits are not grown extensively in New England. Cherries and plums are grown in many places but do not figure largely in the fruit production.

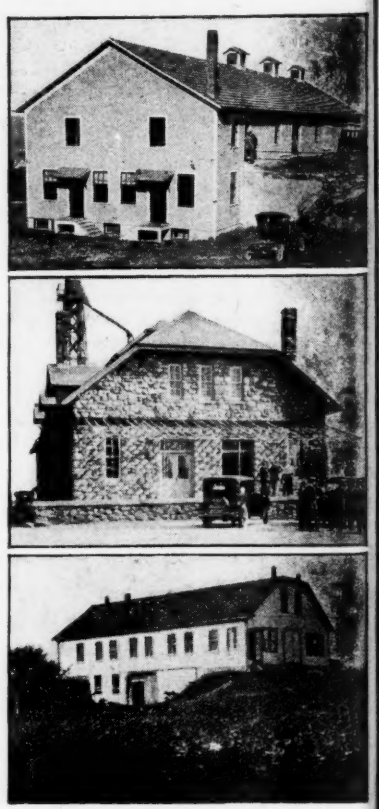
Planting Distances

Apples are quite commonly interplanted in New England. Peaches and pears are sometimes used, but more commonly early maturing apples are employed. As is often the case, fillers are left in too long. Many New England orchards are too closely planted. Many growers realize this and there is now a tendency toward greater distances.

In many orchards there is not the proper mixture of varieties for cross-pollination. Now and then solid blocks of one variety are found, but this is chiefly in the older orchards. New England growers should give careful attention to this factor, as it is a particularly important one under their weather conditions.

Cultivation

Few New England orchards are cultivated. The chief reasons probably are the hilly condition of the land and the rocky condition of the soil; in fact, rocks make cultivation practically impossible in many orchards. Some orchards have not been cultivated for 15 to 20 years and are apparently none the worse for it. The clippings in many orchards are placed



Samples of New England packing houses. Upper—George A. Dascomb, Westminster, Vt. Center—Conyers' Estate, Greenwich, Conn. Lower—C. E. Hardy, Hollis, N. H.

under the trees, and some growers bring in grass and weeds from other parts of the farm with which to mulch the trees. However, cultivation is practiced in quite a number of orchards and good cover crops were seen in several of them. Practically all of the better New England growers use fertilizers. Nitrogen and

(*Continued on page 31*)

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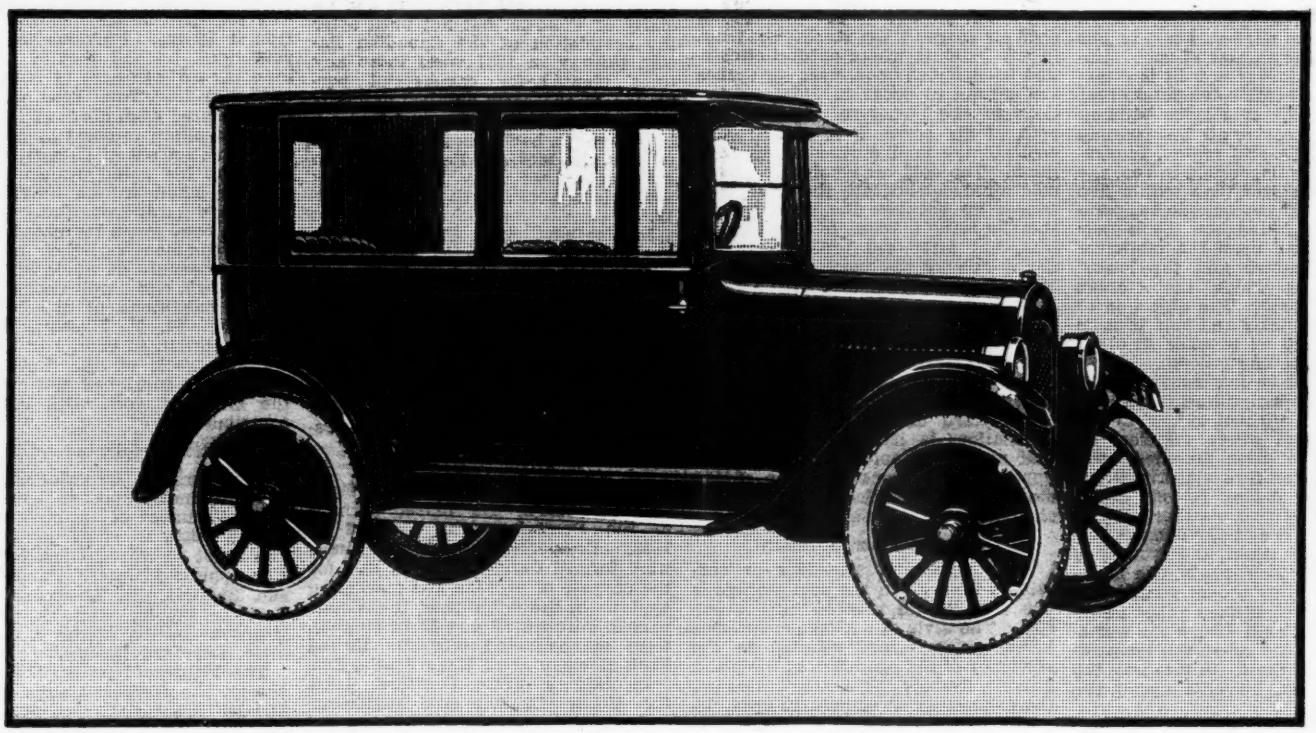

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How to Handle Apples in Cool Storage

(*Continued from page 4*)

perature until it is nearly the same as on the outside.

If possible, the house should not be opened during the day, but should remain tightly closed until the cool temperature of the evening again comes.

To avoid opening the house during the day, it is a wise provision to put fruit in the storage only during the early morning hours. The fruit itself should be as cool as possible when stored. If the fruit is to be placed in temporary storage directly from the orchard, it is an excellent plan to leave the fruit in the orchard during the night and bring it into the storage early in the morning. Fruit so handled is cool and moist when stored, thus adding greatly to the efficiency of the cooling system. Care should be taken in the orchard to keep the fruit in the shade, as fruit left in the sun is quickly injured.

During an exceptionally warm fall, when it is difficult to cool the storage room, it may be advisable n to put the fruit into the storage at once. Under such conditions, the fruit is sometimes placed beneath a temporary roof on the north side of a large building where it may receive all the possible advantage of the cool nights, remembering that it is impossible to cool the storage cellar closer than within five to 10 degrees of the outside temperature during the fall nights. Such practices will depend upon the minimum outside temperature and the lowest temperature at which the storage house can be held. The object is to cool the fruit quickly and hold it at as low temperature as possible in order to check the ripening process.

Temperatures as low as 31 and 32 degrees may be maintained during the winter months without injury to the fruit. In houses where sufficient insulation has not been provided, however, the temperature sometimes becomes too low during periods of excessively cold winter weather. Sometimes the fruit is actually damaged by freezing, even when the house is tightly closed. This, again, can largely be prevented by proper ventilation. Under these conditions, the house should be ventilated during the warmest part of the day, when the temperature is at its highest. In this way the temperature can be held above the danger point.

Thus we see that proper attention to the opening and closing of ventilators is absolutely essential. Indeed no other factor of management is of equal importance in the successful operation of an air-cooled storage house.

Ventilation is necessary even during the winter months for the good of the fruit. Many times the storage house is closed from the middle of December until March, with the result that scald injury becomes severe. This can largely be prevented by systematic ventilation to remove the poisonous by-products of respiration. Even in the severest weather occasional warm spells can be found around the noon hour to give the apple storage a thorough airing every few days.

Arrangement of Fruit in the Storage Room

Often the successful operation of a properly constructed storage cellar is prevented by the method of storing the fruit. This is especially likely to be the case when fruit is stored in bulk. The most common error in this connection is the covering of the false floor in such a manner as to interfere with the upward circulation of air. Another common error is the placing of too much fruit in one pile, or the use of too large bins, preventing the air from reaching all of the fruit. Insufficient space between packages is another violation of the principles of ventilation.

When the fruit is stored in bulk, bins should be provided, holding not more than 25 bushels each. These should be long and narrow so as to expose to the air as great a proportion of the surface of the fruit as is possible. In many cases the bottom layer of fruit should not be placed directly on the false floor, and the bottom of the first bin should be at least six inches above the floor to permit the better circulation of air beneath. If sufficient space is left between the bins, and the false floor is sufficiently high above the ground to provide ample ventilation, this precaution may not be necessary. In any case, at least six inches of space for air circulation should be provided on all sides of the bins. This applies also to the distance that the upper bins should be above the ones below them. A space of at least 12 inches should be left along all walls. If it is constantly borne in mind that the object is to have all the fruit in the path of circulating air, mistakes in this regard will be few. Slatted bins aid in air circulation. By bevelling the sharp corners of the slats next to the fruit, the danger from cutting the skin of the apples is materially reduced.

Avoiding Dead Air Spaces

Another closely related factor in successful storage is the avoiding of dead air spaces when storing the fruit. In any building where natural circulation is depended upon, dead air spaces are certain to occur in different portions of the structure. The natural path of air currents in the average cool storage is illustrated in the diagram. The cold air coming in at the cold air ducts beneath the false floor passes up between the floor boards, thereby being diffused to a certain extent, but afterward proceeds to the outlet flue by the most direct route. This means that the area of the greatest circulation comprises the central portion of the room, while the air in the area along the walls and near the ceiling is not being changed. These areas then should be avoided when storing the fruit, as the most essential feature of successful storage—ventilation—is lacking. This means that no fruit should be placed in the upper two and one-half feet of the storage cellar and that plenty of space should be left along all walls.

The Container Question

The question of packages or containers for fruit in the cool storage is one that should receive more attention. The style of package sometimes bears an important relation to the efficiency of the operation of the plant. Barrels, baskets and slatted crates are the most common containers used, depending somewhat upon the quality of the fruit contained and the method of its disposal.

Considered from the standpoint of the beneficial effect upon the fruit, ease in handling and stacking, the bushel slatted crate is perhaps the best container for apples in the cool storage. It is a convenient size to handle; it stacks easily; it consumes the minimum space; and most important of all, it permits thorough ventilation of the fruit. If the crates are not filled so full as to bring the apples to the very top, and if aisles are left at frequent intervals, the best possible ventilation and consequent cooling of the fruit is secured.

Closed barrels are nearly air tight, permitting practically no ventilation within the package. Thus the fruit cools much more slowly and should be cool when packed, and it should be stored at once. For this reason fruit in barrels usually does not keep so well under cool storage conditions as the same grade of fruit kept in slatted crates. Barrels are awkward to handle and inconvenient to inspect to determine the condition of the fruit as the season progresses.

Bushel baskets permit some ventilation, are convenient to handle, and stack fairly well when covered, but on the whole do not compare favorably with the slatted crate for cool storage.

Humidity

For successful storage, the relative humidity should be in the neighborhood of 85 per cent. With insufficient humidity, the fruit tends to dry and wilt. Too much moisture encourages fungous diseases. The humidity seldom becomes too high even if moisture enters the storage from rains or from seepage. With the natural ground floor, the correct amount of humidity is usually easy to maintain.

If the house has a concrete floor, however, additional humidity will probably have to be added. Water contained in large shallow pans, presenting a large evaporating surface, aids greatly in increasing the moisture content of the air. Sprinkling the walls and floor thoroughly once or twice a week also helps to maintain the proper relative humidity where this is lacking.

Development of Fruit Growing in Canada

(*Continued from page 8*)

sula, where in 1780-90 the United Empire Loyalists planted seeds of favorite varieties brought from their homes in the United States. In 1830 foreign varieties were brought in. The peach industry started about 1850.

In British Columbia the first apple trees were planted in 1850 in the vicinity of Victoria, but not until after the completion of the Canadian Pacific railway in 1887 were there any trees planted for commercial purposes. In the early eighties orchards were set out at Kelowna and Vernon, but plantings had been made previous to this, in 1864, at Penticton. The greatest era of tree fruit planting took place between the period 1903-12.

In Manitoba, A. P. Stevenson, who did much to demonstrate the possibilities, practicability and profitableness of fruit production in the Canadian Midwest prairies (in recognition of which this year's Carter Medal, a yearly premier Canadian horticultural honor, was bestowed), succeeded in getting a permanent stand of crab apples in 1880. In 1885 his success with the hardy common varieties began.

Organization

The Nova Scotia Provincial Fruit Growers' Ass'n, the oldest perhaps in the Dominion, was founded in 1863. Co-operative fruit companies were formed during 1907 and 1912 for the purpose of packing and marketing apples. In the latter year, these companies, between 30 and 40 in number, were amalgamated into the United Fruit Companies of Nova Scotia, Ltd.

In 1859 a Fruit Growers' Ass'n for Upper Canada was organized, which name was afterwards changed to the Fruit Growers' Ass'n of Ontario. From 1885-89 local fruit interests began to organize and affiliate with the Ontario Fruit Growers' Ass'n, and in 1914 the number of such societies was 65. An Ontario Horticultural Ass'n was founded in 1891. During the years 1904-05, several of the local co-operative societies united in a central organization known as the Co-operative Fruit Growers of Ontario. It marked a distinct advance in the co-operative principle, its chief work being to furnish supplies and act as a bureau of information to its members. In 1905 a renewed start was made by the Ontario Horticultural Ass'n. The Vineland Horticultural Station was started in 1907, a Central Selling Ass'n formed in 1913, the Niagara District Grape Growers in 1920, and the Niagara Peninsula Growers, Ltd., in 1921.

In British Columbia, the Okanagan United Growers was established in 1913. The large majority of the present organizations in the province date from the year 1913, being formed under the provisions of the Agricultural Associations Act of 1911 and amendments, subsequently merged into the Co-operative Act of 1920. No less than 20 organizations were incorporated in 1923 in the horticultural industry. The majority of these new organizations have linked up with the Associated Growers of British Columbia, with headquarters at Vernon.

The Fruit Marks Act, Inspection and Sales Act, and Fruit Transportation are administered by the Fruit Branch of the Department of Agriculture at Ottawa, and by provincial branches.

Fruit Breeding

Previous to 1873, Charles Arnold, of Paris, Ontario, carried on some systematic apple breeding and is perhaps the Canadian to whom credit is due for being the first man in the country to do such work. In 1869, Francis Peabody Sharp, of Upper Woodstock, New Brunswick, began apple breeding in the attempt to produce an apple of hardiness and productivity. In 1882, Charles Gibbs, of Quebec, and Prof. Budd, of Iowa, traveled to Russia and gave impetus to the introduction of Russian varieties. In 1886, a law was passed which appropriated money for a system of Experimental Farms. A Central Farm was opened at Ottawa, and branches at Nappan (Nova Scotia), Brandon (Manitoba), and Indian Head (Saskatchewan). It continued thus for 20 years, but there are now 32 of these stations throughout the provinces. Dr. William Saunders, a man who would certainly be placed in a list of 10 who have done the most for horticulture in America, was the first director of the Experimental Farms. Previous to this appointment, he had carried on some breeding work of note at London, Ontario. In 1890, from seed which had been secured from north of Riga, Russia, a seedling orchard of some 3000 trees was set out at Ottawa. In 1894, he began his noted project of crossing the small fruited Siberian crab with best hardy varieties. The best hybrids were again recrossed with the larger common varieties, in the attempt to secure an apple of fair size and quality, and hardy enough for the severe conditions of the Northwest prairies. W. T. Macoun, Dominion Horticulturist, in charge of the horticultural work of the Experimental Farms, has continued and augmented the breeding work with noteworthy contributions.

Varieties Originated in Canada

The Dominion Experimental Farms and Provincial stations have named a large number of varieties of fruits, but mention is made here only of those not of government origin.

In apples: McIntosh, Fameuse, Canada Baldwin, St. Lawrence, Baxter, Scarlet Pippin, Ontario, Swayzie, Crimson Beauty, Banks Red Gravenstein, Langford Beauty, etc.

The Fitzgerald peach, the Windsor cherry, the Herbert Newman No. 23, and Hilborn raspberries, and the Red Jacket gooseberry, among others, are of Canadian origin.

Brokers' Fees in Chicago Held Illegal

PRODUCE brokers of Chicago have been paying an annual fee of $25 to the city. Recently A. E. Jessurun refused to pay the fee and made a test case of it. Judge Barasa, of the Municipal Court, decided that the city had no authority to collect the license. The judge stated, furthermore, that the city has collected between five and six million dollars to which it is not entitled.

A movement is now on foot to organize the brokers so that the fees paid the city may be recovered. The brokers believe that the city of Chicago will try to get the legislature to pass a bill at the next session, giving Chicago the authority to collect license fees. Steps may be taken to oppose such legislation.

Canned Foods Week

THE NATIONAL Canners' Association is conducting a vigorous campaign in preparation for Canned Foods Week, which will be held November 8 to 15. Committees are at work in 47 states. Six hundred thousand posters will be displayed in grocery stores. Fruit growers will find it to their advantage to boost Canned Foods Week as much as possible, for a large proportion of the canned foods are fruits in some form or another. Increased consumption of canned fruits helps the fruit markets in general.

XUM

Use of Fruit in Carbonated Beverages

(*Continued from page 4*)

These are made from syrups which are made from the juice of real fruit and by the addition of cane sugar. Or they may be made from concentrated fruit juice without the addition of sugar, as is the case of some grape beverages.

Attitude Towards Carbonated Beverages

Formerly many people considered carbonated beverages to be injurious to health and avoided their use. Now they are considered as a food product by the United States Department of Agriculture and are regulated as such by the United States Pure Food Laws because they qualify under the following definition of food: "Food is that which when taken into the body either builds tissue or yields energy."

Dietetic Value of Soft Drinks

According to Prof. M. E. Jaffa, of the Nutrition Laboratory of the University of California: "The av rage soft drink contains from five-tenths to nine-tenths of an ounce of sugar to a seven-ounce bottle, which is the only constituent bearing food value. This represents a minimum caloric value of 46, a maximum caloric value of 103 and an average caloric value of 70. The average caloric value of a soft drink is less than that of the cream and sugar added to a cup of tea or coffee. The acid has a therapeutic and hygienic value but has no nutritive value. Soft drinks yield no appreciable amount of mineral. It has long been recognized that fruits were very favorable ingredients of the diet as to the therapeutic action of the organic salt in the fruit and also for their source of fruit sugar. Nutritional investigations carried on during the last decade have conclusively shown that the nutritional worth of fruit juice is far higher than that originally supposed, in that the mineral matter contained in the fruit is basic in character and very necessary to offset the acid character of minerals found in meat, cereals and eggs. Too much stress cannot be laid on the importance of including in the menu, therefore, a generous amount of fruit and vegetables, if for no other reason than to be sure that there shall be a proper balance of mineral matter so that the alkalinity of the blood cannot be interferred with.

"Fruit juice contains an appreciable amount of vitamins, the unidentified dietary essentials, particularly water soluble B and C. No dietary is complete without vitamins, and there is no better source than fruit and vegetables.

"A comparison, therefore, of the two classes of beverages indicates the advantage and superiority of real fruit beverages in that:

"(a) We have ingredients each and every one of high nutritional value which can be put to distinctive use in the body and will net the body profitable returns.

"(b) These returns consist of three different types: (1) mineral; (2) vitamin; and (3) caloric value.

"(c) A drink prepared from berry or cherry juice would yield 85 calories per bottle of seven ounces, while the corresponding amount made from either grape or orange would be about 110 calories. It is thus seen that the minimum of 85 calories and the maximum of 110 calories are respectively 20 per cent to 60 per cent higher than the 70 calories recorded for the artificial carbonated drink.

Demand for Carbonated Fruit Beverages

We are doubtless all familiar with the old line of argument which claims that the people demand the artificial soft drinks, the kind which is available on the market everywhere and in most localities nothing else; that the people demand a five-cent drink; that they won't buy anything else.

One of the most conclusive proofs that there is a demand for real fruit beverages is the fact that there are so many imitations on the market. If there is no demand for the real, why the imitation?

This demand for the imitation reminds one of the man who was haled into court for treating his dog brutally. He defended himself by saying that his dog insisted on swallowing his broom handle. As a matter of fact, he had thrust the broom handle down the dog's throat and by means of it held the dog down with one hand while he beat him severely with a club wielded with the other hand.

The people have been forced to drink the imitation or go without because there is no real fruit beverage available. The indication is that many people are going without, from the fact that the report of the Commissioner of Internal Revenue for the year ending June 30, 1922, showed a decrease of 70 per cent in the revenue from that of the previous year from the same source.

It is high time the fruit industry and beverage industry were awakening to their opportunities and responsibilities along these lines.

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A program of constant mechanical refinement involving the body, engine, clutch, brakes and other units of Dodge Brothers Motor Car, has resulted in an unusual smoothness of performance.

You have only to ride in the car to instantly appreciate the decided freedom from vibration.

DODGE BROTHERS DETROIT

DODGE BROTHERS MOTOR COMPANY LIMITED
WALKERVILLE, ONTARIO

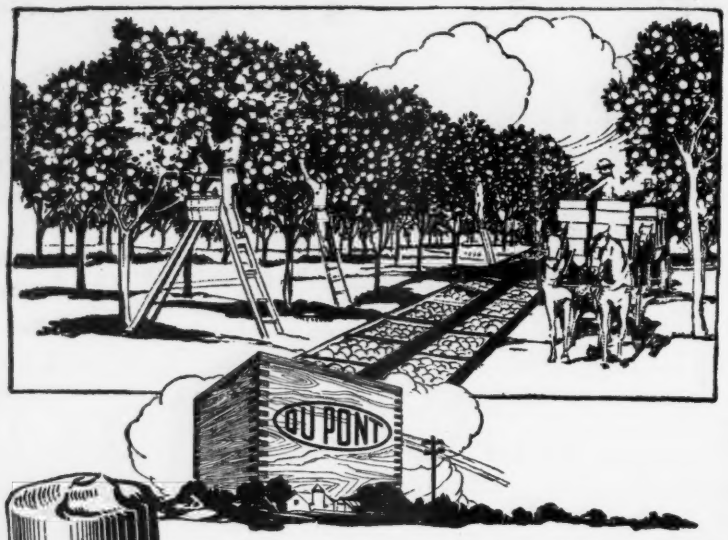
Growers Are Doing It

IT IS estimated that 300,000 farmers in the United States belong to co-operative marketing associations. Of these, 100,000 belong to fruit and vegetable associations.

California leads in the number of co-operators, about 80,000 growers being members in that state. Oklahoma is reported as second, with 36,000 cotton growers.

Peach Carry-over Reduced

THE CALIFORNIA Peach and Fig Growers' Association has succeeded in reducing its heavy carry-over of peaches to 725 tons, and of figs to 6000 tons. The association has undergone reorganization during the past year. The following recommendations have been adopted: (1) that grading be discontinued at receiving points, since most fruit must be regraded at the packing plants; (2) that fruit be received at fewer points; (3) that storage facilities be improved so that better quality can be obtained; and (4) that extensive advertising in national magazines be discontinued and that farm papers and other periodicals reaching consumers be used instead.



Plant Your Trees by Explosives Power

YOUR case of dynamite is a *portable* power house. You take your explosives out to your tree-planting job to blast the ground where trees are to be set. The explosion loosens the soil and makes digging tree holes a quick and easy job.

Planting trees in blasted holes makes more plant food available, makes the ground more water-absorbing, destroys parasites and other soil diseases.

Your orchard will mature earlier and you "cash in" quicker, when you plant your fruit-trees in blasted ground.

The du Pont "Oval" trade mark on case and cartridge is your warranty of quality. Du Pont means dynamite composed of the proper ingredients and made according to standard practice. With du Pont you obtain the most explosives power for your money.

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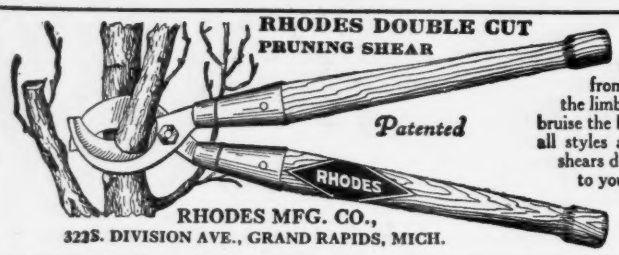
RHODES DOUBLE CUT PRUNING SHEAR



Patented

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

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Metal makes the most satisfactory roofing for farm buildings or city construction.

APOLLO-KEYSTONE Copper Steel Galvanized Sheets are unexcelled for Culverts, Tanks, Silos, Roofing, Spouting and all exposed sheet metal work. Look for the Keystone added to brand. Sold by leading dealers. KEYSTONE Copper Steel is also superior for Roofing Tin Plates. Send for "Better Buildings" booklet.
AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.

Tree Surgery for the Fruit Grower

(*Continued from page 7*)

Another change which the eastern orchardist is making is to swing away from the "open center" tree back to some form of leader. The open center tree is structurally a weak tree. In fact, when two or more limbs, originating at practically the same point, are of equal size and vigor, the resulting crotch is usually a weak one. Whether the form adopted to avoid this be the "Modified Central Leader," the "Modified Side Leader" or what not, the fact remains that *dominant* and *subordinate* branches are preferred to those of equal development. Thus, by proper use of tree surgery, we are enabled to secure structural strength.

Dressings for Wounds

The fact that the heart wood of the tree is *dead* brings up another problem—that of wounds. Every wound which exposes the wood is a threat at the life of the tree. The heart wood plays no part in the life processes of the tree, but as supporting tissue it serves an important purpose in holding up the frame work and in carrying the crops of fruit. At times it is necessary, through the removal of dead or broken branches, to expose the wood. Since the healing of such wounds on mature trees is comparatively slow (less than a quarter of an inch a year on the average), these wounds should be made only when unavoidable. In some experiments at the Ohio Experiment Station, it was found that in a thoroughly sprayed orchard no wound dressings were necessary as the repeated sprayings served to keep the wounds sterilized, and any wound dressing will slightly reduce the rate of healing. Under any other conditions, dressings are to be recommended. A standard application is a thick paint composed of white lead and raw linseed oil. Water glass has also been found very satisfactory.

Bracing of Fruit Trees

Another phase of surgery, which has not had the publicity which it deserves, is the bracing of bearing fruit trees so as to enable them to withstand the tremendous strain put upon them by a maximum crop of fruit. A faulty crotch in a bearing tree cannot easily be remedied, but often the strain can be so taken off the crotch as to enable the tree to remain intact even after the production of a series of heavy loads. What engineer can give us the strain at the crotch of an apple tree by the weight of a barrel of apples suspended perhaps 20 feet from the point of attachment of the limb? The wonder is not that the autumn gales bring down the limbs on the old trees but rather that so many are able to withstand the test.

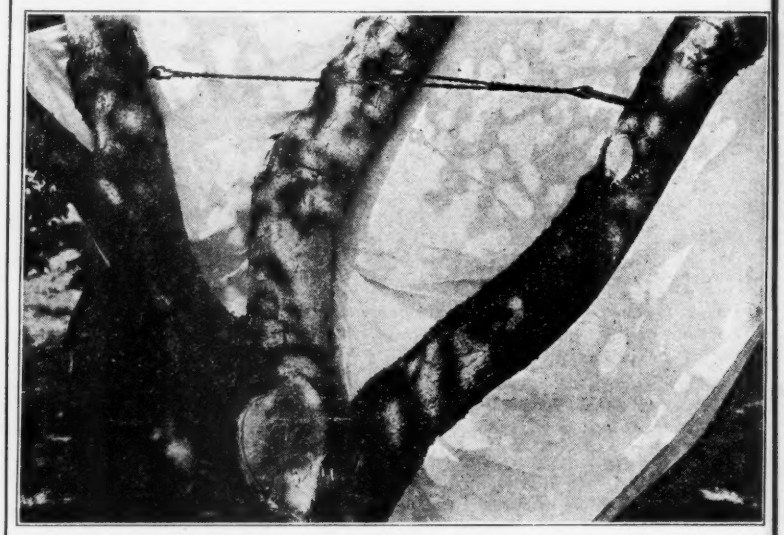

Fig. 3—A method of wire bracing. Sometimes a wire ring is used in the center of the tree from which wires radiate to the various branches

The commonest way of supporting a weak crotch is to put a bolt through it, but this is not the best method. A support three or four feet higher will give many times the protection, and can be made as easily. There are numerous ways in which these supports are made. We often see a wire or chain about two opposing limbs. This, while of temporary value, should not be left permanently, as it will be enveloped by the growing branches and will injure the tree. For a permanent job, the simplest method is to use either lag screws, with the head bent sideways to hold the wire, or eye bolts made of one-half inch iron. These lag screws, or eye bolts, a bit of the proper size, and some No. 9 wire, with tools for handling the same, are all that are required to do a thorough job of tree bracing.

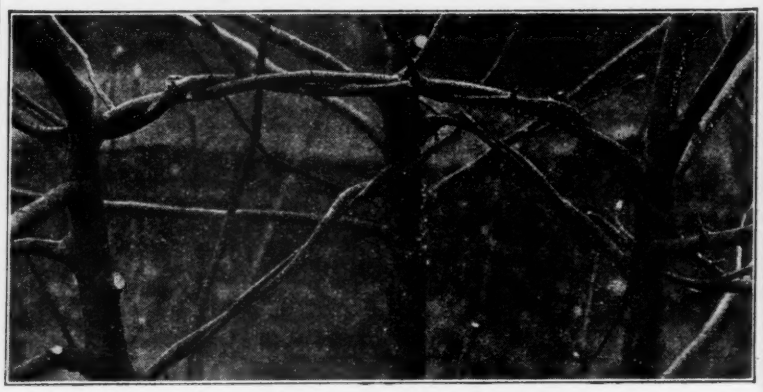

Fig. 4—A method used in building natural braces

How to Set the Bolts or Screws

If but two branches need be joined, holes are bored at opposite points in the two limbs, using a bit of the exact diameter of the eye bolt or the core of the lag screw. If the eye bolt is used, bore the hole completely through the limb, drive the eye bolt through, cut away the bark so that the nut will

(*Concluded on page 28*)

Protecting Orchards From Rodents and Game

(*Continued from page 3*)

chard is only a few miles from the city of Huntingdon. During the past 10 years he has lost, at a conservative estimate, over $18,000 by the depredations of deer. They feed on the tender shoots of young apples, stunting the trees and causing them to send out a sappy side growth, which often winter-kills. Peaches are rarely hurt seriously. Some parts of his orchard have been replanted three times, and one large block has been abandoned. The does are so tame that they even eat the garden truck near the house. Hanging small sacks of asafoetida on the trees will keep the deer away for a time, but this is an expensive method, and the material must be renewed every month. Keeping dogs helps some. Even if the fruit grower should shoot a doe that he actually catches in the act of browsing or rubbing his trees (which is rarely possible, because they work mostly at night), he is very likely to have some extremely disagreeable notoriety, which will inevitably hurt his local sales, and 90 per cent of Pennsylvania fruit growing is for local markets. Furthermore, he will be unable to satisfy the game warden that he acted solely to protect his property.

Appeals for Help Bring No Response

Appeals for protection to the state game administration have thus far brought little satisfaction. Apparently, the game laws are dictated by and administered in the interests of the city sportsman, who seems to think that it is the bounden duty of the farmer to raise game for him to shoot. I am an ardent sportsman myself, but I am unable to see why the farmer should be penalized in order to make good hunting for the sportsman. This applies to other game besides deer. Last winter more than a score of fruit trees in my orchard were denuded of their fruit buds by grouse. The loss was not less than $200. Yet, if I had shot those birds, I would have been subjected to a heavy fine.

Property Rights Must Be Respected

We are coming to the point where the property rights of fruit growers must be recognized in the game laws. In some of the New England states, losses inflicted by deer during the closed season are paid by the state. Several years ago I met a New Hampshire fruit grower who had just received $75 from the selectmen of his town to compensate for loss due to the disbudding of his fruit trees by grouse. These just compensations should be paid from the hunters' license fees.

Merely replacing a tree killed by deer is not compensation. The loss is three-fold: First, the cost of the tree when it was set; second, the investment of time and money in caring for it up to that time; third, the crop expectation, or the income that might have been received from the tree had it been allowed to grow. Before the war, the common basis of calculation of value was a dollar a year per tree; it is at least 40 per cent more now.

Grower Wins Court Case

At the recent meeting of the State Horticultural Association with the American Pomological Society in the orchard of D. M. Wertz, of Waynesboro, the visiting fruit growers were shown the results of our over-zealous protection of deer; young trees practically ruined, bearing trees with lower limbs bruised and thrown out of bearing for the time being.

Mr. Wertz, it will be recalled, authorized the shooting of deer found in his orchard, out of season, and won the court case that resulted therefrom. Some of his fine 20-year-old apple trees were deliberately and maliciously cut down thereafter. Was this done by sportsmen in retaliation? Lawlessness is the inevitable result of a law that is unjust. The remedy is not to set the law at nought by mutual recrimination and sniping, but to amend it so it will be fair to all.

Plowing

is one of the many jobs the McCormick-Deering does well

YOUR late fall and winter work would be a lot easier and more profitable all around if you were in partnership with a McCormick-Deering 2- or 3-plow tractor.

Now is as good a time as any in the year for a man to come into McCormick-Deering tractor ownership. Weeks of hard work and hot weather have been exhausting man and horse. Many weeks of trying work lie ahead. Labor is scarce and high-priced, and every week's wages takes money out of pocket. Take plowing, for instance—the slowest, most laborious, most expensive farm work. It must be faced now and next year and every year.

With the McCormick-Deering 15-30 tractor one man plows 12 acres a day; with a 3-horse team he averages only 3 acres. *With the tractor he does 4 days' work in 1 day.*

With the tractor he plows deeper and better, and at the right time; heat and hard ground don't stop him; he saves the moisture and gets ahead of weeds. Between-times his tractor tackles the grain and corn harvest—runs the binders and the corn picker, fills the silo, runs the shredder or sheller—and then it finds all kinds of winter belt jobs ahead of spring's work.

Farm product prices have taken the upgrade. Better times are on the way to the farm. Be in position to farm efficiently all the year, without yielding your profits to surplus labor costs. See the dealer about a McCormick-Deering Tractor — lasting, dependable, all-around farm power.

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Drawbar—Belt—Power Take-Off
Life Guarantee on Crankshaft and Main Bearings
Unit Main Frame
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Ball and Roller Bearings at 28 Points
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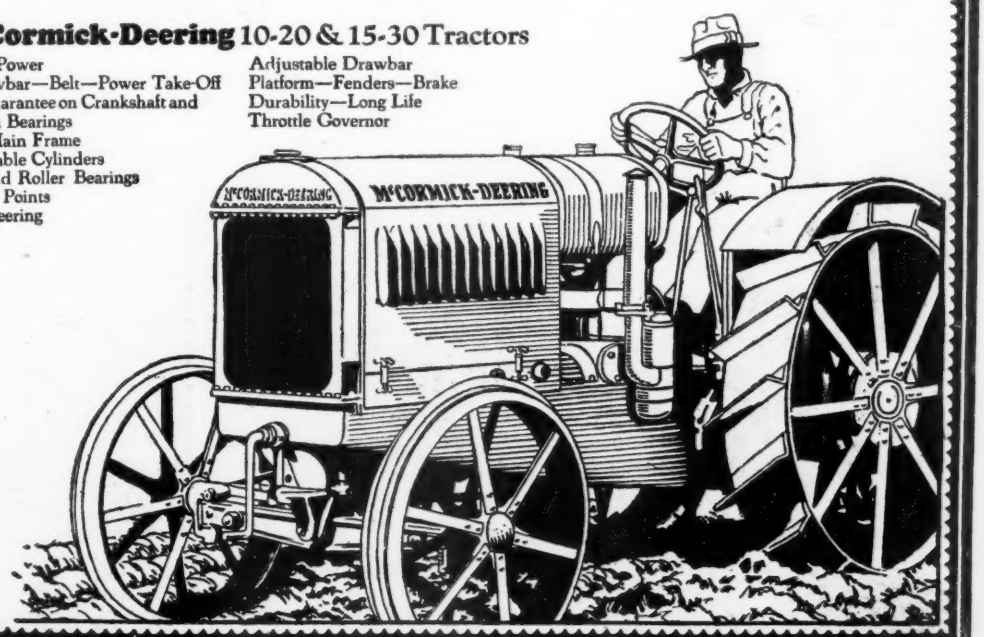

State Should Assume Responsibility

What should be the basis for a law which will provide substantial justice for all concerned? Deputy Secretary of Agriculture, McKee, of Pennsylvania, stated the answer to the fruit growers at the same meeting.

He said that the only equitable basis for a solution of the depredations of deer, or any other protected game, is to consider the animals as livestock owned by the state. If the livestock of a farmer breaks through the fences and damages a neighbor's corn field, the injured party has recourse to law for the damage sustained, provided it cannot be adjusted by mutual concession and agreement. The same principle should apply to livestock protected—hence owned—by the state.

Whether the state should pay damages in money, remove the surplus game, or authorize the owner or warden to kill it when found trespassing at any time (whether actually seen doing the damage or not) is comparatively immaterial. These are details that necessarily must vary to fit conditions. The really important thing is for the state to assume responsibility for its livestock. Precedent may be found in the payment of damages to livestock done by dogs, which are required to be licensed by the state.

We are all glad to help repopulate our woods, fields and streams with the game that was once so abundant, and the fruit grower likes to hunt as well as the city man. But it is not fair to protect game at the expense of the farmers. When the issue is joined between the sportsmen and the farmer, there can be no question which must give way as being of lesser importance to the welfare of the nation.

Pomological Convention at Atlantic City

ARRANGEMENTS are being rapidly completed for the joint meeting of the American Pomological Society, the New Jersey State Horticultural Society and the National Grange at Atlantic City, N. J., on November 11 to 14. It is expected to be one of the largest and best horticultural meetings ever held in the East, according to Paul Stark, president of the American Pomological Society.

At the Atlantic City meeting one of the chief subjects will be "Increasing the Consumption of Fruit." A special conference will be held on marketing and distribution. Other subjects to be discussed by leading authorities are export, co-operative, local and roadside marketing, manufacture of by-products from lower grades, fruit juice manufacture, pollination problems and taxation of orchard lands. A large and varied exhibit of products and supplies is being planned.

All growers who can attend this meeting will profit by doing so. It will undoubtedly be one of the best horticultural meetings of the year.

The Little Dears

"Mith Lucy," lisped the littlest lady of the house, helpfully anxious to seat the heavy-weight caller, "Can you sit down on just one chair?"

Big, Highly-Colored Fruits and Vegetables

Bring Quick Sales at Top Market Price

The choicest Fruits and Vegetables are obtained by using

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Made by skilled chemists of one of the world's largest chemical companies, insuring dependable, uniformly high quality, giving maximum results with minimum material.

Cultivation, fertilization and thorough spraying with high quality spraying material will make the most money for Fruit and Vegetable growers.

B T S Dormant and growing period spray. Superior to lime-sulphur. 110 lbs. does the work of 600 lbs. of the best lime-sulphur.

Send for SPRAY DIGEST. Valuable information for every Fruit or Vegetable grower. Free on request.

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Lime Sulphur. Solution.

Arsenate of Lead. Powder.

Atomic Sulphur. Paste. Spreads a film over fruit and foliage. Can be used with Arsenate of Lead.

Dritomic Sulphur. Powder. Does not interfere with functions of foliage or development of plant. 90 per cent available sulphur. 10 per cent adhesive and spreader. Highly concentrated Keeps down cost. Easy to handle and mix. Flows freely. Operates under low pressure. Can be used with arsenical.

A S P Dust. 83 per cent fine powdered sulphur and 8 1-2 per cent arsenical.

Fungi Dust. 85 per cent fine powdered sulphur. Contains no arsenical.

Bordeaux. Powder. 12 1-2 per cent metallic copper, prepared from 99 1-2 per cent bluestone and uniform high test lime. Flows freely through nozzles and covers a great area per gallon.

Calcium Arsenate For Cotton, Tobacco, Potatoes and Tomatoes.

Arsenite of Zinc. The quick potato bug killer. Not easily washed off by rains. Used as dust or spray. Use with Bordeaux for blight.

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6-Year Old Stark Delicious Tree Bearing Its Third Crop

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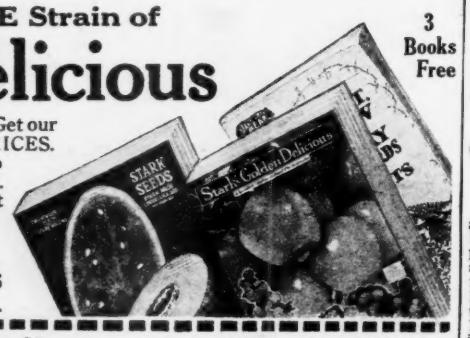

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Yes! Tell me HOW I can get an $.80 Tree FREE. I also want books checked below.

☐ BIG NEW FRUIT BOOK to guide me in tree selection —FREE.

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Orchard Problems and Their Solution

Edited by **Paul C. Stark**

Use of Fillers in Orchard Planting

What is the best method of using fillers in an apple orchard? I expect to plant a new orchard next spring and plan to use either early apples or peaches for fillers. —E. J. S., Michigan.

IT MAKES little difference whether peaches or early bearing varieties of apples are used for fillers. The important thing, however, is the planting distance and the arrangement of the fillers. An ideal method, making use of fillers, may be described as follows: Planting the permanent trees at a distance of 40 feet, fillers may be put in at 20 feet apart, actually making a total of four times the number of trees. However, instead of calling all of these trees fillers, one-third of them (those located in the center of each 40 foot square formed by the permanent trees) should be considered as semi-permanents. Thus the orchard will consist of 25 per cent permanent apple trees; 25 per cent semi-permanent apple trees; and 50 per cent filler apple trees or peach trees.

Of course the filler and semi-permanent trees are only temporary, but actually they may remain in the orchard long enough to bear a good many profitable crops. Usually the fillers need not be cut out until the end of 12 to 15 years. This is accomplished by the elimination of every other diagonal row all the way through the orchard. The trees at this stage are 28 feet apart, and there is plenty room for the remaining trees until they reach the approximate age of 25 or 30 years. This will change the direction of the rows temporarily, but there is plenty of room for spraying and the other orchard operations and the direction makes little difference during this period.

After 25 or 30 years, when the permanent apple trees have reached a large size and quantity production of fruit, the semi-permanents should be cut out, leaving the permanents 40 feet apart each way.

The advantages of the foregoing method are very easily seen. In the first place we have about 108 trees on an acre during the early production period of the orchard. This means quantity production as soon as the trees reach bearing age. The fillers will produce a large number of crops before they have to be cut out, and will during this time more than pay the original and operating costs of the orchard. During this expensive period when the orchard proper is coming into bearing, the fillers of peach or early-bearing apple trees are paying the bills. It is a sound economic proposition and good orcharding.

Cooling the Common Fruit Storage in Early Fall

I have some trouble in my home storage in early fall because the temperature is usually too high and fruit that is placed in it does not cool off quickly. My storage is quite large and when the warm fruit is placed in, it holds the temperature high until the weather turns cool and this causes the fruit to ripen earlier than I would like. Can you give me some ideas to correct this?—M. A. D., Indiana.

YOUR problem is one which many fruit growers face, particularly in sections where the fall is quite warm. It is important in handling fruit to get it picked and put in cold storage as soon as possible. Otherwise, the ripening process will develop very rapidly and fruit will not hold up in storage as it should.

I have had some successful experience in cooling storage houses by using the following equipment—a large box for ice with an opening, attached to a blower which is run by motor. The blower we used was simply an old blower off of an old threshing machine. The blower blew the air off a large box of cracked ice and the cool air was blown out to various portions of the storage house through air pipes which were constructed with ordinary lumber. By arrangement of the pipes, this air was blown to various portions of the storage house. This not only enabled us to keep the storage house at a cool temperature but also gave valuable ventilation and movement of air, all of which is important in handling common storage of fruits. A cooling system of this kind can be installed at a very moderate expense and will pay for itself many times over if the size of the storage house is sufficiently large to justify it. By installing reversible motor and having outside connections with the conductor pipe, the hot air can be sucked from the ceiling through these pipes and discharged into the open, when the hot air will be replaced by cool air, provided it is cooler outside than inside. In late fall, during cool nights, this method is used very successfully without the aid of ice.

Fall Pruning of Fruit Trees

Is the pruning of apple trees in the fall objectionable? I have nearly 10 acres of young apple orchard and if I do the pruning myself I must do most of it this fall.—E. T. M., Kentucky.

IT IS usually considered preferable to prune all fruit trees in the late winter or spring, but this point has probably been over-emphasized. In sections where there are mild winters, winter-killing should not result and fall pruning should therefore not be harmful.

Provided pruning has been carefully done during the first years of a tree's life, there would not be much heavy cutting necessary after this time. Furthermore, what there is will be largely cutting out of interfering branches with the purpose of thinning out the growth and letting in light to the remaining wood. Cutting of this kind can usually be done in the fall without fear of injury.

One thing may actually be in favor of fall pruning, provided it is done before the leaves fall. This point is that it enables the pruner to see more vividly the results he is obtaining, particularly in regard to thinning out the branches where the growth is too thick and is producing too much shade. On the other hand, it is always a good plan, even with spring pruning, to prune a few sample trees while the leaves are yet on, to serve as a pattern in the dormant season (spring).

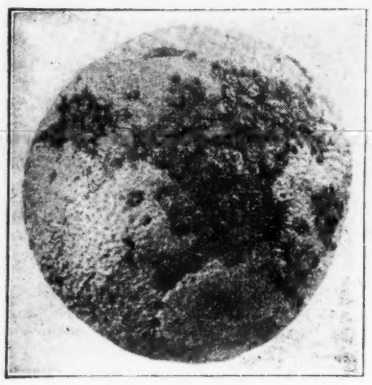
In general, however, it is safer to do most of the pruning in the spring or any time during late winter, after the coldest weather is past. This applies to heavy cutting particularly and to the pruning of old bearing trees. A small amount of cutting, thinning out growth, removal of suckers, etc., may be done any time during the year with almost equal success.

Present Status of Citrus Canker Problem

(*Continued from page 5*)

unchecked, the citrus industry of the Gulf Coast states would not be adding much to the wealth of this country at the present time.

Outside of accomplishing the eradication of canker, it has been worth while from the grower's standpoint, and the industry as a whole has been fully compensated for the actual value of the trees many times over.



Effects of citrus canker on fruit

The success of the eradication has increased the security and re-established the confidence of the public at large in the citrus industry of the Gulf Coast states, which, of course, has resulted in increased land values, etc. Further, in many communities that were threatened with disaster, a spirit of co-operation and helpfulness, which still persists, was created. Again, in the search for varieties and hybrids resistant to canker, several promising fruits, which may have commercial possibilities, have been found.

Thus, the actual cost of the citrus canker eradication campaign has been more than realized through the increased stability of the citrus industry as a whole throughout the country.

Coming Fruit Grower Meetings

NOVEMBER 11 to 14: Joint meeting of American Pomological Society and New Jersey State Horticultural Society, Atlantic City, N. J. Meetings, exhibits, conference on fruit marketing and distribution. H. C. C. Miles, secretary, Milford, Conn.

November 11 to 16: Fifth Mid-West Horticultural Exposition, Waterloo, Ia. Annual meeting of various Iowa horticultural organizations. Exhibits of products and supplies. R. S. Herrick, secretary, State House, Des Moines.

November 17 to 22, Annual Fruit Show of the College of Agriculture, University of California, Berkeley, Calif. Annual Fruit Growers' Conference. Exhibits desired. Write Division of Pomology, Berkeley.

December 9 to 11: Fifty-seventh annual convention of California Fruit Growers' and Farmers' Association, Sacramento, Calif.

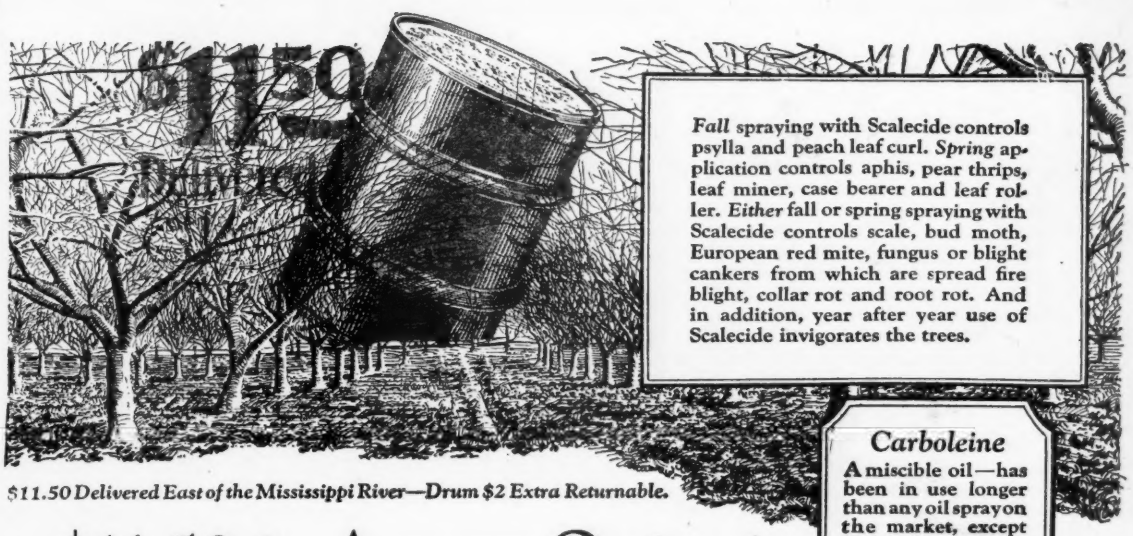
December 10 and 11: Indiana Horticultural Society, Claypool Hotel, Indianapolis, Ind. Joint meeting of pomologists and vegetable growers and florists. H. H. Swaim, secretary, Lafayette.

December 16 to 19: Illinois State Horticultural Society, Urbana, Ill. Meeting and exhibits. H. W. Day, secretary, Springfield.

February 2 to 4, 1925: Ohio State Horticultural Society, Ohio State University, Columbus, Ohio. To be held in connection with Farmers' Week. F. H. Beach, secretary, Columbus.

"Sewage Systems for Farm Homes" is the title of Circular 173 recently issued by the University of Wisconsin, Madison, Wis.

Subscribe to the American Fruit Grower Magazine—3 years for $1.00.



Fall spraying with Scalecide controls psylla and peach leaf curl. *Spring* application controls aphis, pear thrips, leaf miner, case bearer and leaf roller. *Either* fall or spring spraying with Scalecide controls scale, bud moth, European red mite, fungus or blight cankers from which are spread fire blight, collar rot and root rot. And in addition, year after year use of Scalecide invigorates the trees.

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$11.50 for Average Orchard

$11.50 worth of Scalecide will spray an average orchard of 75 to 100 twenty-year old apple trees until they drip—or as many trees as one 50-gallon barrel of lime-sulfur applied with equal thoroughness. Lime-sulfur is considered cheap—but it is now recognized that it does not do the work. Scalecide costs the same or even less—and not only does the work but is *guaranteed to make a better orchard.*

Scalecide is not an oil emulsion but a miscible oil that mixes instantly with cold water and stays mixed without agitation. Its continuous use for the past twenty years throughout the fruit-growing world has proven that it will not do injury such as has been so often attributed to oil emulsions and improperly made miscible oils.

On every tree, shrub and vine that sheds its leaves in winter—use Scalecide as *your* dormant spray. Then you will know that you have done all that can be done *at that particular time* by any dormant spray or combination of sprays. If your dealer doesn't carry Scalecide, show him this advertisement—or order direct from us. Send $11.50 plus $2. for each 15-gallon drum. The $2 will be refunded upon return of drum.

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While oil emulsions have not yet proven their value and safety, and we do not recommend them, we will supply them to you of a quality and stability not obtainable elsewhere. If you insist on using oil emulsions, let us quote you prices.

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Cuts from Both Sides of the Limb—

Cuts 1½ Inch Limbs with Ease and does not bruise.

Forged from bars of fine crucible steel carefully tempered in oil, and fitted with hardwood hand grips, which cannot come off, split or pinch the fingers. Strong, light, handy and efficient. Weight 3 lbs. Length 24 in. **Price $3.50 postpaid. West of the Mississippi add 25c. Circulars on request.**

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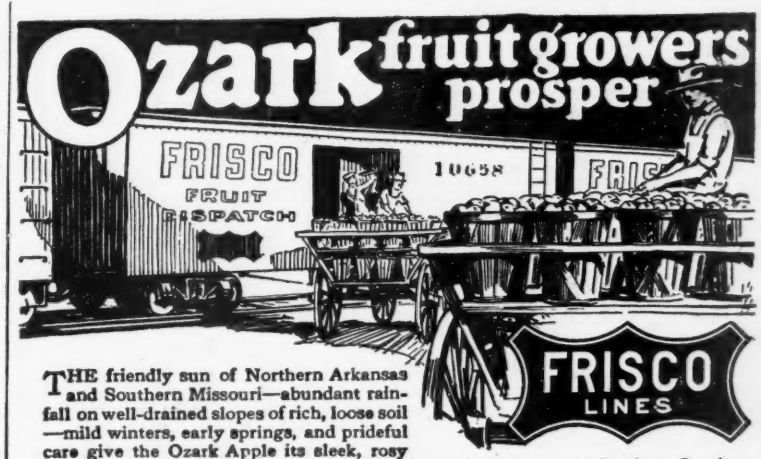
Ozark fruit growers prosper



THE friendly sun of Northern Arkansas and Southern Missouri—abundant rainfall on well-drained slopes of rich, loose soil—mild winters, early springs, and prideful care give the Ozark Apple its sleek, rosy cheek and full deliciousness—the Ozark Peach its bloom—the luscious Ozark Grape its tender plumpness, and the Strawberry the commercial importance that occupies the attention of one of the most efficient cooperative marketing associations in the country.

The soil—the climate—the excellent facilities for shipping to nearby markets—hard surfaced roads—and the certainty of just reward for effort make the Ozark Country the ideal location for the ambitious fruit grower. Orchards and vineyards mature in a few years on land that then becomes almost priceless. A fine spirit of cooperation, prosperous, settled communities and good schools make it a delightful homeland.

The Ozarks are the great fruit shipping area of the Central United States. They are the only spot where a man can start with moderate capital under ideal conditions that promise early success and independence. Write me for full information.

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"This is public ownership at its best"

Sec'y of Commerce Herbert Hoover

U. S. Senator Arthur Capper Kansas

Secretary of Commerce Hoover in a talk radiocast to five million people thus defined superpower:

"Superpower means interconnection of (electrical) systems and larger central stations, coal and water, scattered over the whole union .... It implies no gigantic exploitation, for that is impossible under state regulation of rates and profits."

This interconnection "is in daily progress before our eyes."

But it cannot reach its full development or attain the remarkable economies assured by engineers if American initiative and enterprise are hampered by what Secretary Hoover calls "the deadening hand of the government."

"If we have not the capacity as a nation to regulate these great tools in the public interest," it is Secretary Hoover's conviction, "we much less possess the capacity to operate them on behalf of the Federal Government."

Senator Arthur Capper of Kansas in a talk which was also radiocast to five million people, likewise expressed his confidence in these regulated companies. Because of their record he expressed the belief "that the application of power to agriculture for the mutual benefit of the farm, electric light and power industry, and the nation as a whole, is in hands that may be trusted to find a mutually advantageous solution."

And because so many consumers of electricity own securities of the companies Senator Capper said that the electric light and power industry "is becoming in an increasing degree a great community enterprise. This, in my opinion, is public ownership at its best."

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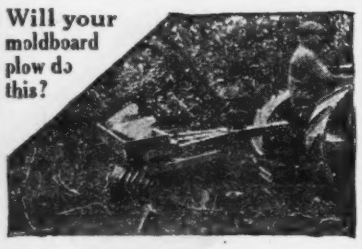

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Get More Money For Your Fruit

You can average higher prices for your fruits by selling them at public sale than in any other way. And the selling cost will be lower. In addition, you get your money within twenty-four hours after sale.

Write for free copy of booklet entitled "More Dollars for Fruit Growers."

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by C. E. Bassett

ALL CO-OPERATIVES in the fruit and vegetable industry are commencing to recognize their interdependence. The apple growers of Wenatchee cannot operate successfully without the co-operation of Yakima and Hood River. The potato growers of Maine must consider those of Michigan, Minnesota and Wisconsin, if they would make a success of their state organization. Each commodity offers a national problem, not a local one alone. While problems of production, of grades and standards, of brands and labels and of pooling may be local in their effect, the problem of national marketing is a joint problem of all co-operatives in control of that particular commodity.

Make use of that local and state pride which develops a healthy rivalry and urges us on to excel, but do not stoop to destructive competition between growers of the same commodity because they happen to reside in different states. Organize on commodity lines always and let the nation be the boundary, for we must have the united strength of the growers to bring about efficient merchandising of our products. No matter how efficient our methods may be for preparing our fruits for the market, unless the fruit merchant can be made to see that a rapid turn-over at a small margin of profit is more to his advantage than a high rate of profit on small sales, we will never be able to develop the consumer demand for our perishable products.

One of the greatest needs for organization is to raise the millions of dollars necessary for putting business methods in the sale and distribution of our products. We need millions to carry on consumer advertising in the papers and magazines. Then we need as great a sum to do intensive work in helping the retailer make more money for himself and so more money for the grower. The retailer is not interested in the grower or the consumer, except to hold his trade. We can interest him by showing him how he can increase his business and make more money for himself.

The chain stores have shown the way, through their ability to employ high class experts—just the kind of men the fruit growers must have to revolutionize the methods of retailing fruits and vegetables. Enlightened self-interest is the most powerful influence that can be applied to the retailer. Many retailers are not expert in cost accounting. They fail to realize the value of the fruit and vegetable line under quick turn-over methods.

Fresh fruits and vegetables, possessing the elements that make for good health and long life, can be made the most popular of foods. Enough excellent work has been done along these lines by the citrus organizations to prove that this work is practical, but the surface of the problem has hardly been scratched. We are firmly convinced that the present merchandising methods of the average fruit and vegetable merchant is the one thing that is damming up the business stream and has much to do with the weakened fruit markets, even in this year of moderate production.

We are losing millions every season through inaction and through jealous competition. Why not use some of these millions to put our fruit industry on a real sound business basis? We have found that consumption of certain commodities can be increased many times in some of the smaller towns by developing them into direct carlot users. A town that ordinarily buys 50 or 100 packages from some nearby city, pays extra local freight and the additional profits and gets a rehandled product in broken and unattractive shape. The direct shipments bring lower freight costs and a fresher product that can be sold cheaper, which naturally stimulates consumption. These are suggestions of what we must do if we would make our fruit industry profitable and permanent.

THE CO-OPERATIVE movement today is suffering most from a lack of trained leaders—men and women—to act as intelligent members, managers and salesmen. Enthusiasm and good intentions are desirable, but they are a poor substitute for cool business judgment and the ability to "keep one's house in order." In a recent address, President Coolidge said:

"A wise, skilled and unselfish leadership can do more than anything else to rescue agriculture. The farmer needs leaders who will stay with him, who have the tact and the courage necessary for management and who have the fidelity to refuse political preferment and business opportunity. There are such leaders. In the sacrifice they make to serve the farmer lies the greatest hope for his salvation."

Professional propagandists have been able to "organize" communities because of the profit there was in it for themselves, and because there was not in that community a single person who realized what the movement required or who had sufficient experience to safeguard the attempt. Enormous business operations were started, with a manager who was long on enthusiasm but short on business training, or, if an experienced business man was employed, he was entirely out of sympathy with the movement and lacked the tact to steer the craft through the rough seas that were sure to arise. A man who is capable of running a co-operative business may be attracted away by a better salary or become unable to continue the work. It is therefore most important that he have an "understudy"—an assistant, who could put on the harness, if the manager should lay it down.

Our agricultural colleges are only just waking up to their opportunity and duty in this matter. Our college students have been fed up on "economics" until they escape after graduation in a sort of a haze and with a bad case of economic indigestion. The average course in economics is dry, uninteresting and means but little to the average student. He sits through the lectures because it is a part of what is "required."

In discussing this difficulty recently with a prominent teacher of economics of one of our greatest universities, he admitted that the course was anything but interesting and not what the farm boy needed and wanted, but, said this professor: "I am kept so busy here in teaching that I do not have the time to go out and check up on this marketing work, so as to present it as it should be given." In our humble judgment, a little less teaching and a little more preparation to teach is needed, if such is the case.

Let the colleges give us straight-thinking young men and women to come back to the farm and become our community leaders, capable of or-

ganizing, managing and selling the products of the neighborhood, and we will have men who have the farmers' viewpoint and who can work out our problems with fairness to all. They must understand human nature and be filled with much of the religious spirit that is willing to serve, for the sake of serving. The agricultural colleges have done grand and good work, but this great need is one that they can best meet, and it is encouraging to see that they are moving to answer the call for community leaders.

TO THOSE who think that the government should rush to the aid of the farmer and by some kind of legislation put him on easy street, we commend the following editorial from the *New York Journal of Commerce* published under the heading, "Co-operatives Abroad":

"It is now stated that the Tobacco Growers' Co-operative Association, of Raleigh, N. C., is considering the operation of a foreign selling organization either by means of exclusive representation by an established firm or else through a new selling organization. This is a departure to be welcomed. So much has been heard about assisting the farmer to co-operate for export through governmental subsidies of one sort or another that it is heartening to learn that a successful, established co-operative enterprise has the courage to venture into the field without prodding. It all goes to prove that expansion of co-operative enterprises will take place naturally once the opportunities for additional profit are appreciated by the membership. Forced developments, on the other hand, are almost certain to prove disastrous."

UNDER the capable management of A. U. Chaney, the American Cranberry Exchange is one of the strongest and best marketing associations in this country. Though this association does not have a grower's contract, the selling service it renders is so good that shippers have no desire to leave. Controlling such a large per cent of the commercial cranberries of this country, they are able to "announce opening prices" for the market. How refreshing to find one association that does not have to ask someone what he will give, but states the price and sells the whole crop f. o. b. shipping station, whether there is any sugar to sweeten them or not. Cape Cod expects to furnish 300,000 barrels this year, as against 400,000 last season. New Jersey will have 180,000 barrels, which is 10,000 barrels less than in 1923. Wisconsin estimates its crop at 40,000 barrels. while last year that state had 35,000 barrels.

EFFORTS to secure standardization of the Oregon pear this season were unavailing. Hood River's combination extra fancy and fancy grade, settled on by local shippers, corresponds to the extra fancy grade of the Medford district. While Hood River marks the second grade as C-grade, the Medford shippers mark their pears of the same quality as fancies.

Efforts will be made before another season to secure standardization of pear grades and the designations of them.

IN AN effort to regain their old markets, about 500 of the largest apple growers of Virginia have pledged themselves to market their crops under a guarantee of quality, under Virginia state inspection. The "Valley of Virginia" brand will be marketed by growers of the Shenandoah valley and the "Piedmont Virginia" and other brands will come from the Piedmont district.

Virginia growers object to the United States apple report, claiming that it over-estimates the real crop and so depresses prices, "converting an agency created for the benefit of the farmer to one with which to batter him on the head."

A recent meeting of the apple growers at Staunton was characterized by enthusiasm over receipt of reports that the markets of the South, as well as of other sections, were being won back to Virginia apple growers through the regulations of inspection and of standardizing. At one time the southern markets traded heavily in the Virginia fruit. This trade, however, was impaired through poor packing.

Standardizing of the pack now is well under way, and it already appears that the growers behind this movement are recovering markets they lost in the South and elsewhere, besides winning new markets.

"WONDERLAND" is the trade name under whch the White River Fruit Growers' Association will market their fruit this season. The association is made up of several hundred fruit growers in the Arkansas and Missouri Ozarks, organized through the efforts of the Missouri Pacific railroad. The fruit interest in that district has been increased many fold in the last two years.

CALIFORNIA is always thought of as the home of the strongest fruit co-operatives, but even there it takes a strong grower's contract and the strong arm of the law to enforce it to keep members in line. Several suits have been commenced by the Sun-Maid Raisin Growers and the Peach and Fig Growers' Association to compel delivery of fruit or to collect damages for non-delivery. The California courts have held co-operative contracts as being legal and the liquidated damage clause as collectable.

J. A. ADKINS of Bald Knob, Ark., will be the salesman for the Russell Fruit Growers' Association next year and the newly elected officers are: H. F. Thomas, president; T. C. Plant, vice-president; George Bland, secretary-treasurer; E. A. Cook, R. P. Moore and W. D. Roetzel, members of the board.

TO ADVERTISE the peach season and increase the demand for Elbertas, the State Department of Agriculture of New Jersey officially designated one week in the height of the season as "Yellow Peach Week" and thus helped in the marketing of the crop. Many growers and organizations of growers are grading and packing to meet the Federal and state inspection, which carries with it a guarantee to the buyer. They have found that a dependable pack is the only policy in building up a marketing organization.

THE NORTHWEST Fruit Growers' Commission, appointed by the Washington State Chamber of Commerce, and whose work in creating the Pacific Northwest Fruit Exchange was cut short by the heavy April frosts reducing the tonnage of Northwest fruits, is now in an uncertain state, pending action by N. B. Coffman, president of the state chamber. Mr. Coffman's severe illness at the time of the receipt of the resignations of the five members originally appointed, and the necessity of his spending sometime convalescing in California, has interferred with the reappointment of the commission.

A SURVEY of the co-operative movement in California with the idea of determining the elements of failure and success as they have appeared from the experiences of the various types of co-operative marketing enterprises undertaken in that state, is to be conducted by the Bureau of Agricultural Economics, Department of Agriculture. The survey will be made jointly with the University of California. The data thus obtained will later be made public in reports of the department and the university.

Wifie: "I suppose now you wish you were free to marry again?"
Hubbie: "No—just free."

People who never do any more than they get paid for, never get paid for any more than they do.

In building the Oakland Six, the engineering skill and manufacturing facilities of Oakland are united with the almost unlimited resources of General Motors.

Because of these united efforts, it is easy to understand why the Oakland Six is winning and holding the good will of all who buy it.

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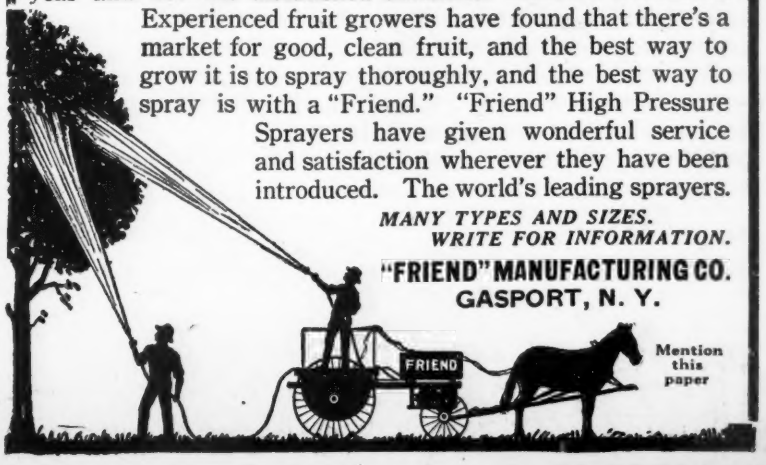
THE GREATEST YEAR IN THE HISTORY OF "FRIEND" SPRAYERS HAS JUST PASSED. "FRIEND" Sprayers were shipped into 33 states and many foreign countries last year and not one dissatisfied customer. ***There's a Reason.*** Experienced fruit growers have found that there's a market for good, clean fruit, and the best way to grow it is to spray thoroughly, and the best way to spray is with a "Friend." "Friend" High Pressure Sprayers have given wonderful service and satisfaction wherever they have been introduced. The world's leading sprayers.



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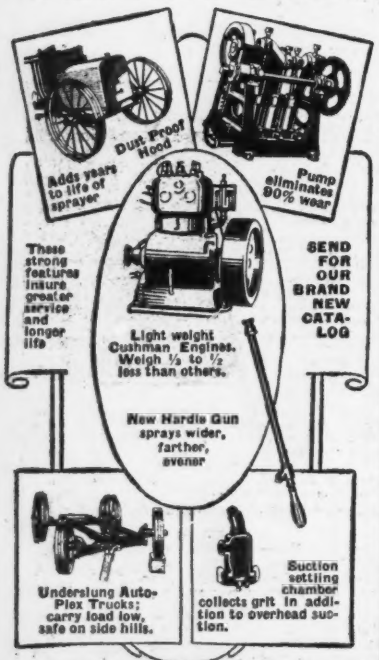
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These strong features insure greater service and longer life
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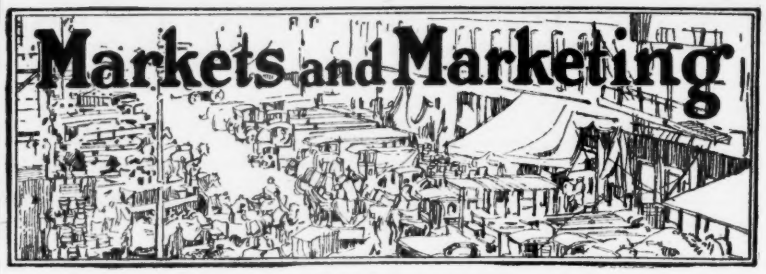
Cool Weather Endangers Grape Buds

BECAUSE of the cool, wet weather in eastern sections, grape buds may not be properly matured, thus making them subject to winter killing, according to the New York Agricultural Experiment Station. Such injury is especially likely on poorly drained soils. Soils should oe well drained, it is said, in order to cause the grape tissues to harden well before cold weather.

Cultivation in a vineyard should be discontinued in July or August, following which the weeds should be allowed to grow without cutting, since these compete with the grape plants for both moisture and fertility, and thus assist in maturing the wood and fruit buds. Cover crops sown after the last cultivation serve the same purpose, provided they do not shade the ground too much. Rye, wheat, oats, barley and buckwheat make good cover crops, as they shade the ground little. Rape and cowhorn turnips are less desirable.

Some winter injury to grapes may occur even with the best matured wood and fruit buds, but the extent of the injury may be reduced to the lowest proportions by keeping the above facts in mind. Steps should be taken every year to bring about early maturity of the fruit buds.

THERE are 13,770 co-operative associations in Japan, according to a new book entitled, "The Co-operative Movement in Japan." Credit societies are the most numerous and marketing associations are second in number.



by C. E. Bassett

A SUBSCRIBER from Missouri writes to inquire if the co-operative marketing associations have really brought the producers of fruits and vegetables any nearer to the consumer. That is a highly proper question and I wish that my observations and experience would permit me to answer with the one word—yes. But the number of cases in which the number of middlemen have been reduced by co-operative marketing methods is so small that it must be admitted that there is much to be learned and done along this line.

But it must be remembered that the co-operative movement has done some wonderful work in aiding grower members to produce what the markets want, and to do that at a great saving through co-operative buying of farm supplies. Co-operative packing plants have perfected the uniformity of grade and pack; have established and advertised brands and so have developed confidence in the minds of the purchasers. These are very important accomplishments and are worth many times what the effort has cost.

But, when it comes to disposing of the packed product, we find that sales managers are inclined to follow the old well-beaten path and sell to the same crowd of speculators that were the old outlet for the growers, when they operated independently. In fact, I have been acquainted with selling organizations that simply added another middleman—themselves—to the chain of selling expense. One of them (that may be referred to as "A") used to go to a group of growers and give the impression that if the growers would only give their business to A, better service and prices would be obtained than were being supplied by other selling companies (which we will refer to as "X," "Y" and "Z"). On the strength of these claims, the business was given to A. Curiosity led me to investigate the results and I found that A had difficulty in moving the crop as fast as it was ready and, in their dilemma, they sold many of the cars to these same competitors for the business—X, Y and Z. If A had been able to get enough extra for the shipments to cover their own charge, then it would have been less open to criticism, but in many of these cases the new selling arrangement had resulted in the adding of another expensive middleman to the deal, rather than lessening the cost of getting produce from the producer to the consumer.

One reason for this is that most salesmen of fruits and produce have received their training in the speculative school—generally with city commission merchants—and neither understand nor favor the development of the co-operative movement. They seem incapable of viewing this marketing problem from the grower's standpoint and view this movement as the "crazy act of a bunch of kickers." The writer has felt that the chain stores have a great future, on account of their great purchasing power and economy of operation, and that they will be the means of moving at retail a large number of cars of fruits and vegetables at a fair price, as they depend upon volume of business rather than large profit margins to bring them success. He therefore suggested to one salesman that an effort be made to sell to a large chain store grocery concern a number of carloads of potatoes and thus eliminate the usual line of brokers, jobbers and commission merchants in the deal. The effort was successful and a large number of cars of potatoes were thus handled on a close margin, moved quickly and at a substantial saving to both the growers and eaters of those "spuds." But this deal was looked upon by the rank and file of city salesmen as not quite "ethical." And several took the time to inform me that I had a lot to learn about how to run a fruit and vegetable business. The truth of that statement hurt a little, but I still believe that there are times when sales can be made without burying them under so much expensive and unnecessary service.

And it is that one thing—service—that must be weighed most carefully, when it comes to condemning middlemen. We all want to be waited upon, but we object to the cost. We will not, or cannot, hold our products until the markets are ready to take them, and the consumer will not, or cannot, buy his yearly supply in advance, but both the grower and consumer classes unite in the lamentation chorus—"down with the middleman"—the only fellow who will take the storage and speculative chance. We will all agree that where a really necessary service is rendered, a reasonable charge should be made, but where the co-operative movement can render a cheaper or better service, or can dispense with certain services and save the cost, it should be done.

IN ANSWER to the frequent question of why fruit is rotting in the grower's orchard while it is very high in the city markets, the United States Department of Agriculture has taken the case of the Georgia peach this season and finds that the reason is to be found in the costs of transportation and other marketing costs.

The past season witnessed the production of the largest peach crop in the history of Georgia and much of the fruit that was not thinned was too small to pay transportation costs. This was left in the orchards and rotted. A bushel of culls costs just as much to get to market as does a bushel of high-grade fruit. The total crop in Georgia this year was estimated at 18,000 cars, but only 13,500 cars were finally marketed. The government report says: "The loss of one variety, Hiley Belles, was especially large. When these peaches came on, prices were so low that had the producer delivered his peaches to the packer free of cost the fruit would not have paid the marketing charges. Many cars of early peaches were put on the market without being thoroughly culled, and because they were unsatisfactory to the trade, the market became demoralized. Later varieties, as a result of grading and elimination of poor fruit, sold better.

"The different cost items which enter into the expense of marketing peaches show convincingly why it pays to handle only the best fruit during a season of large production. The approximate cost of a six-basket (24-quart) peach carrier, together with the cost of packing and loading into cars, is 52 cents. The freight and icing charge on a six-basket carrier from Georgia to New York is about 70 cents. This is a total of $1.22 delivered in New York. From the net sales price received for the fruit, these charges are deducted and the balance is received by the producer for his labor and fruit. On August 4, the range of prices on six-basket carriers of peaches was from $1.75 to $2.50. These prices were to jobbers of carlots and represent the initial cost of peaches at the first point in the line of marketing distribution in the city.

"The distribution of fruits and vegetables in New York City is a costly operation at best and this cost is greatly increased by the ungraded condition of much of the stock which is delivered to this market. In order that buyers may inspect the fruit, it is necessary that it be moved to a central point where work may be done as quickly as possible. In New York the piers furnish this point and there the cars are centralized and distribution begins. A car of peaches is delivered to a carlot receiver to a pier in New York. The receiver unloads the car on the pier and splits it into units from five to 100 carriers, each jobber buying according to his needs. The jobber has his purchase delivered to trucks, which haul it to his place of business in one of the five or six secondary markets. Here the jobber splits his supply into units that will meet the needs of the retailers. Again the truck is used to deliver the retailer's purchase to his place of business. Here the last splittings of purchases are made and range in size, according to the consumer's desires, which may be one peach or one or more baskets. Often there is another truck delivery which takes the product to the consumer.

"Each step in this distribution is an added cost and each handler must make a profit. The cumulative result is the consumer's price. It has been estimated that the initial moving charge from pier to truck, a distance of 500 yards, is $20 per car. From pier to the large distributing points will range from $24 to $65 per car. Each handler must exact a profit, which may be small, but the total expense is large. Peaches are a highly perishable product and the various handlings along the route from producer to consumer entail considerable loss through physical injury, while changes in temperature aggravate these and other defects. This loss is the consumer's loss as the retail price of the merchantable fruit must cover the expenses and profits in all the transactions.

"These figures and facts, which explain rather convincingly the reasons for the so-called waste of fruit at the production end, while the consumer must pay a considerable price, have been prepared by the department after careful investigation. Similar conditions are to be found in the handling of practically all perishable food products."

RECEIPT is acknowledged of three inquiries from subscribers, asking if the efforts to establish standards for packing fruits and vegetables is in the interest of farmers, or if it is done to make it easier for the trade.

Any movement that will tend to create confidence in the mind of the buyer towards any commodity will increase a demand for that product and so make a market. Standardization is the first essential in merchandising any manufactured product. When our readers go into a store to buy a bar of soap, is it necessary for them to paw over the whole store supply to find the largest bar or the one of best grade? The uniformity of the goods makes such a waste of time unnecessary. But when we go into that same store to buy a peck of potatoes or apples, every human faculty is needed to get the best, unless these products have come from some reliable grower or association by whom they have been graded according to some well recognized standard.

The government has at Washington in the Bureau of Standards a set of weights and measures, and all scales and measures of solids and liquids must conform to them or be discarded and destroyed. It makes it possible for us to order goods from a distance and feel sure that we will receive an exact quantity. And in these days, when our fruits are produced many hundreds of miles from the consuming markets, we want to make sales free on board the cars at our shipping station. How is a buyer going to order a car of apples at a given price, unless he knows very nearly what he is going to receive?

It is often claimed that manufacturers can regulate the grade of their goods more closely than can the farmer in growing his crops. But inspectors in factories watch most closely to see that nothing of an inferior grade goes out on orders, except as "seconds." The citrus grower associations of California and Florida, and the northwestern box apple associations have demonstrated that they can grade so accurately that when you go into a store to buy their products you do not have to ask for the top layer. The bottom is just like the top.

The United States Department of Agriculture has issued grades for nearly a score of farm products, and others will be established as fast as possible. These grades are not compulsory but only optional. But, if a grower or shipper quotes his products as being of one of these grades, the purchaser can hold him to the delivery of just that grade. Without these, or similar grades, it would be impossible to have Federal or State inspection at shipping point or at point of delivery. At the present time, auction sales are being made in many cities when the cars of perishables are thousands of miles away, on the basis of the reports of government inspectors. That shows how much confidence the buyers have in government grades and inspection.

It is so well known that graded products hold up better in storage that loans on warehouse receipts require that the products be graded. How can we advertise our farm products and increase the demand, unless we offer a product that is uniform and that meets the requirements of some well known "yard stick?"

If we growers demand goods of uniform quality when we buy, is it fair to ask our patrons to take our ungraded products? And as a business proposition, do we not know that the section that is in the lead in this matter of standardization will be the one that reaps the golden sheckles, while those who offer goods of an unknown value are bewailing their bad "luck?"

Standardization is for the good of all.

FIGURES regarding the 1922 raisin crop show that during the crop year of 1922, the Sun-Maid Raisin Growers of California, Fresno, Calif., received from its members 204,630 tons of raisins, with a gross sale value of $30,830,087.78, including fruit valued at $4,413,552.05 carried over into the next season. Returns to growers amounted to $13,151,954.40, or 43 per cent of the gross sales, an average price of 3.2136 cents per pound.

Chain Stores Unite

A RECENT report states that the 14 largest chain store systems of the United States have combined their 19,000 stores into one organization for the purpose of securing larger control of the retail trade of the country. Among the organizations which have united their interests are: Woolworth, Kresge, A. & P. Stores, United Cigar Stores, United Drug Stores, McCrory Stores, S. H. Cress Co. and the Kroger Grocery & Baking Co. It is said that these stores did a combined business of $68,000,000 last year.

This movement should be of interest to food producers because of the fact that the operations of the retail store system of the country constitute a vital problem in the distribution of food products.

Discernments

"She married him because he bought such a beautiful engagement ring."

"Yes," commented Miss Cayenne; "so many girls are better judges of diamonds than they are of men."

Mother—No, Bobbie, absolutely no. For the third time I tell you that you can't have another chocolate.

Bobbie (in despair)—Oh, gee, I don't know where Dad gets the idea that you're always changing your mind.—*The American Legion Weekly.*

Keeping the Telephone Alive

Americans have learned to depend on the telephone, in fair weather or in foul, for the usual affairs of the day or for the dire emergency in the dead of night. Its continuous service is taken as a matter of course.

The marvel of it is that the millions of thread-like wires are kept alive and ready to vibrate at one's slightest breath. A few drops of water in a cable, a faulty connection in the wire maze of a switchboard, a violent sleet, rain or wind storm or the mere falling of a branch will often jeopardize the service.

Every channel for the speech currents must be kept electrically intact. The task is as endless as housekeeping. Inspection of apparatus, equipment and all parts of the plant is going on all the time. Wire chiefs at "test boards" locate trouble on the wires though miles away. Repairmen, the "trouble hunters," are at work constantly wherever they are needed in city streets, country roads or in the seldom-trodden trails of the wilderness.

Providing telephone service for this great nation is a huge undertaking. To keep this vast mechanism always electrically alive and dependable is the unending task of tens of thousands of skillful men and women in every state in the Union.

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Retail Package for Apples Wanted in Michigan

A BETTER retail package for use in the sale of apples is the object of a contest to be conducted in connection with the apple show and annual meeting of the Michigan State Horticultural Society to be held at Grand Rapids, Mich., early in December. Cash prizes are being offered for the best packages submitted. The public is to be the judge.

The aim of the contest will be to find some type or types of packages which will tend to increase retail sales of apples and thus stimulate consumption of the fruit. A feeling exists that the bushel and barrel have outgrown their usefulness, the State Horticultural Society advises, and that a more suitable package is needed, possibly one that a consumer can carry home from the cash and carry stores or which may be mailed to a friend in a distant city.

Good Ruler Wanted

Mr. Blimp: "Remember, the hand that rocks the cradle rules the world. Don't forget that, dear."

Mrs. Blimp: "Then you come right in and rule the world awhile. I'm tired."—*Good Hardware.*

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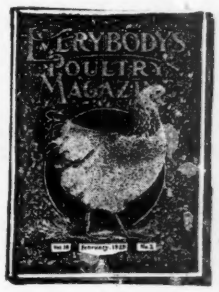

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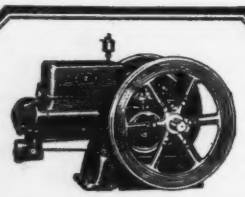

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Oregon Prune Situation

PRUNE drying in Oregon and in Clark county, Wash., was practically completed early in October. The season was unusually early due to dry weather. Some prune shipments were made this year in September, an unusual occurrence.

The quality is said to be particularly good. Brown rot, which often causes serious damage, did not appear this season. The pack will be free from splits and immature fruits, it is reported

The tonnage in Oregon and Clark county was placed at about 45,000,000 pounds early in the season. A heavy drop just before maturity eliminated about 10,000,000 pounds. As a result, only about 30,000,000 pounds, or less, were actually produced. As an example, the Eugene Fruit Growers' Association estimated its production at 1,000,000 pounds early in the season but later revised its estimate to 600,000 pounds.

Last year the Oregon and Clark county crops totalled about 45,000,000 pounds. A carry-over of 20,000,000 pounds was on hand from the 1922 crop. At present, there is no carry-over of prunes in primary hands. A strong demand is reported for the lower grades of prunes at this time, and the growers are expecting fair returns for the crop.

Rebuilding the Gulf Coast Citrus Industry

(*Continued from page 8*)

Coast would have been totally wiped out. The damage suffered last winter serves as a good demonstration of the value of proper spraying for the control of insects and diseases, and it demonstrated that orchards cannot withstand low temperature if the vitality of the trees is impaired by insects and diseases.

The cold spell experienced last January was the second of the kind in 25 years; in fact, not since February, 1899, had this section experienced so low a temperature as on January 6 and 7, 1924. In addition, the weather was comparatively cold throughout the winter until the middle of April, so that the trees had no chance to recuperate. It is the writer's opinion, from previous observations, that if normal weather had prevailed after the freeze, the damage would not have been as great as it was. Approximately 40 per cent of the trees, irrespective of whether they were 20 years or one year old, were damaged beyond the point of rehabilitation. It should be borne in mind that setbacks of this kind are only incidental and may be expected to occur at intervals in any fruit industry, and therefore the grower should, by diligent study, draw lessons from such occurrences as will, in the future, enable him to produce a better tree with greater production per acre.

Vitality an Important Factor in Resisting Cold

It is interesting to note that practically all bearing orchards, which had a heavy crop in 1923 suffered more severely from the low temperature than orchards having a smaller crop, the soil conditions, method of cultivation, insect and disease control and fertilizing being the same in both orchards. For example, there are orchards that bore only one-half as large a crop in 1923 as in 1922. These orchards came through with a minimum loss in number of trees, while the orchards that bore heavily in 1922, and even heavier in 1923, suffered more severely. A few orchards that bore extremely heavy both years, but were given heavier applications of fertilizer, had small losses.

It seems to resolve itself into a question of vitality. Where the heavy crop used up all the plant food for fruit production, leaving little or nothing for the tree itself, the damage was more severe. These observations point clearly to the need of adequate plant food supply to take care of the crop produced, plus a surplus for the tree itself.

The question of cover crops during the latter part of the summer is another very important factor, the value of which was also demonstrated last winter. While a reverse of the kind suffered by the Satsuma growers last winter is indeed a hardship for a fruit-growing district, it is not without its compensations, because it points out certain vital things that the growers must observe in the future to be better prepared to meet set-backs of this nature.

Rebuilding the Satsuma Industry

The Satsuma industry on the Gulf Coast will be rehabilitated and built better than it originally was. The trees that survived last winter's low temperature will be better cared for in the future than they were in the past. The work of rehabilitation of the Satsuma orchards was begun promptly last spring by giving ample fertilization and intensive cultivation throughout the summer until late in July, when cover crops were planted in many orchards. The dead trees are being gradually removed, and the dead wood in living trees is being pruned out so that many orchards now are presenting a better appearance than they did a year ago. The greater portion of the trees lost will be replanted during the coming winter.

The outstanding requisites for rehabilitation of the industry are as follows:

1. The removal of all dead trees and the pruning out of all dead wood. This dead material should be removed from the orchard and burned.
2. Disease and insect control must be as perfect as possible.
3. More plant food must be given; in fact, the grower will do well (and it will pay him well) to increase the fertilizer 100 per cent in not less than two applications, the first of which should be applied in February, the second late in May or early June, and the third about the time the cover crop is planted late in July. The potash content in the fertilizer should be increased to not less than eight to 10 per cent, and the potash derived from sulphate of potash.
4. Intensive cultivation must be practiced from early April to the latter part of July. This cultivation should be shallow.
5. Systematic spraying should be practiced during the winter while the trees are dormant, with oil emulsion for scale insects. At least two sprayings with Bordeaux solution should be made in the spring, one when about half of the blossoms are shed and another two weeks later to protect the young fruit against the sour scab fungus.
6. One or two sprayings should be made during the summer against rust mite, not only for the purpose of producing bright fruit but for the purpose also of preventing the trees from being devitalized.
7. Legume cover crops should be planted each year and plowed under after harvest of the fruit crop.

If a uniform system embracing the suggestions set forth above is carried out, it will result in a much greater production per acre, and in a better quality of fruit than has been produced before. That being so, the costly set-back from the freeze of last winter will benefit the industry in the future more than anything else could have done. The grower should always bear in mind that it is not so much a question of the cost per acre per year in maintaining the orchard up to the highest possible standard, as it is what we get out of it in the way of profit.

The watchword for the Satsuma growers in the future should be *intensive* rather than *extensive*, because the former leads to better profit and better orchards, while the latter results in low yields of poor quality fruit and in small profits, if any at all.

Effects of last winter's freeze

XUM

The Orchard Home Department

It's a Fine Day—in Skye

by Mary Lee Adams

IN THE Inner Hebrides, just off the west coast of Scotland, lies the "Misty Isle of Skye" with its well-earned reputation for excessive rainfall. Yet the Skyeman's invariable greeting to the passerby is, "It's a fine day," to which, if you have any respect for convention, you reply "Aye, wind ahead," and he, cheerily, "Aye, none too cool." This breezy interchange is the more interesting in that the second statement (your own fortunately) is the only one with a grain of truth in it.

As a matter of fact, it's a very damp day with wind ahead and a temperature that keeps one active. But what of it? Should the damp day turn wet, and you with it, nobody minds in Skye. Men, women and children sit chatting on the sopping turf while the rain falls upon them. Soon the sun looks out and the whole visible world of mountain, moorland, lake and cliff, becomes invested with a crystal, many-colored charm that wipes the rain clean out of remembrance.

Land of Enchantment

Fear of wet weather has held tourists away from Skye, yet it has its lovely fair summers and, could I make you see through my eyes, you'd be clamoring to spend your next vacation there. Such a restful time you would have, without hurry or worry. "What is a handful of hours in the Hebrides?" If you are the victim of "nerves" (and what American woman is so independently unfashionable as to deny them?) Skye will soothe you into forgetting that such things exist. Its hospitable people, the soft, fragrant, exhilarating air, the historic and mythical romances that cling to its every nook, and above all, its sheer loveliness in rain or shine, form an irresistible combination.

Throughout its 50 miles of length and 23 of width, one can get scarcely more than three miles from sea water, so deeply indented are its shores with bays and long winding lochs reaching far inland. These give the island its surprising length of coast line—over 2000 miles. Cascades tumble down the mountain sides, hasty rivers rush through ferny moorland glens, rills gurgle among the black peats and water wells up from the mossy bogs that spread their wet sponges over the high hilltops. All these keep meadow and mountain wondrous green until the heather veils the autumn slopes in purple glory.

Smartest of Sport Clothes

Be sure to get your sport clothes here. Knitting and weaving are the main home industries. Sheep, in these high latitudes, produce an unexcelled quality of wool. The very best tweeds and homespuns are made in this and the neighboring islands. St. Kilda and Harris homespun tweeds, with that flavory, "sheepy smell" so extolled by experts, have their enthusiastic advocates. American golfers know them well.

The smart Fair Isle sweaters are skillfully knitted in designs that bear a curious resemblance to the patterns woven by our own Navajo Indians. From Shetland comes those exquisitely soft, lacy shawls, so sheer that they can be drawn through a ring. Royalty, itself, does not disdain them. On a visit to the Wembly exposition, the Duchess of York, daughter-in-law to King George, purchased one of these lovely shawls for $500.

You may see your tweed suit wandering over the moors, literally "on the hoof." Sheep graze the steepest slopes, and scarcely less sure-footed are the picturesque little Highland cattle that look so fierce with their long horns, shaggy sides and long forelocks tumbled over wild eyes.

You need not fear the cattle but probably will do so at first in spite of their gentleness. As one old Skyeman told me, "They'll no harm ye. It's natural ye would be nairvous. I'd be nairvous mysel'. Na, a stick will do ye no good. Aye! if it comes to grips like that, they'll ha'e the best o' ye." Let them alone and they will no more think of picking a quarrel with you than would the bright little wire-haired doggies or the clever collies that companion the shepherds everywhere.

Plain Living, High Thinking

A sturdy simplicity of life saves the Skyeman from want. The crofter's thatched gray stone cottage seems to rise from the ground as naturally as do the flowers, and has the essential beauty of fitness. The sodded huts of the poor cottars (they who have no land) look as much at home on the moor as the shaggy cattle, but little comfort can be found within their low

Highland cattle in Skye

windowless walls. A small square of glass, set amid the deep grass and flowers of the roof, occasionally relieves the inner gloom.

Yet even from these "black houses" many youths go to the renowned university of Edinburgh, master their studies with unusual ease and attain distinction in law, medicine and divinity. The average of intelligence is remarkably high, the percentage of illiteracy surprisingly low. If you remark to a Skyeman that a certain individual is exceptionally bright, his reply is "Aye, he would be. He's Scotch." Their simple faith, apparently borne out by facts, is that the Scotchman has superior brains and that the Highlanders and Islanders are superior Scots.

Skye's Romantic Castle

However limited the stay in Skye, no one fails to visit old Dunvegan Castle, for so many centuries the stronghold of the McLeod chieftains. The great gray pile of the castle rises from the great gray cliff overhanging Loch Dunvegan. When the portcullis was lowered, none might gain access to its massive moated walls save from the sea by a tiny path cut in the rock.

Here romance reigns supreme. Facing the castle frowns the "Hanging Hill" where those out of favor with the Chief were strung up with little ado. Pouf! what's a hanging more or less? For a real thrill, enter the banquet hall and look at the long table where the Campbells of Argyle were entertained when they came to make peace with their ancient foes. It is a brave sight. On the right of each Campbell sits a McLeod, for this is a feast of brotherly love. The Chief rises and lifts his goblet to toast his guests. It is filled with blood, and suddenly, as he dashes its contents across the table, every McLeod responds to the signal by stabbing the Campbell on his left. And so they slew 120 of that clan. Nor did they differ much from other wild Highlanders 200 years ago.

A Horrid Husband

What a relief to enter the picture gallery. Beautiful portraits by great masters smile from the walls. But there's something sinister about the smile that the nineteenth chief (great-grandfather of the present McLeod of McLeod) casts upon the lovely lady on his right, and in the sneer with which he has turned from the less lovely lady on his left.

Ah! Madam, that's his first wife. When he tired of her and fell in love with the second lady, he threw poor number one into that dungeon, down the hole of which you may peep shuddering. Unwilling to incur the odium of starving a wife to death, he threw bits of salt herring down to her until she obligingly died of thirst, and "all went merry as a marriage bell" at his second nuptials.

Our Link with Skye

Though the heroes of Skye have some black names among them, her adored heroine, Flora McDonald, was altogether lovely and admirable. This courageous woman lived most of her life in Skye, where she is buried. Here, at great risk of her life, she brought Bonny Prince Charlie, the "Young Pretender," to the throne of Britain, disguised as her Irish maid. Here she hid him in caves, and on this shore she bade him farewell when he escaped to France.

Later she came with her husband to North Carolina, where some of her descendants still live, along with numerous other Highlanders who emigrated at the same time as the McDonalds. They have fulfilled the saying that a Scotchman is as sure to bob to the top as a cork. A McLeod has been governor of South Carolina, and Angus McLean is governor-elect of North Carolina. So the Hebrides have stretched a slender thread of kinship across the ocean.

Man the Swiftest Creature

IN THE water, on earth and in the air, man was, within the memory of men, outdistanced by birds, beasts and fishes. This did not suit his temperament and he began to cry aloud to science, "Faster! Faster!" How well science has served him in all three elements is shown today.

On the earth, the hunting leopard of India, the cheetah, is the "fastest thing on legs," and can run for a short while at the rate of 60 miles per hour. The record of the automobile stands, unbroken so far as I know, at a little over 136 miles per hour.

The tarpon, swiftest of fishes, has shown a speed estimated at 80 miles per hour, but the motor boat, Miss America, leaves him, though not far, behind.

In the air man encounters his swiftest rivals. Of these, Asia produces the leader in the spine-tailed swift whose flight is said to reach at its maximum 200 miles per hour. Yet just here man has shown his greatest superiority. So rapidly is the speed of aeroplanes increasing that it would be rash to state a maximum. Two hundred miles per hour is already far distanced, and we cannot guess the ultimate development.

So man, physically one of the most defenseless and inferior of created beings, has triumphed through his brains. His deficiency in speed has been more than made up by mechanical contrivances, while as for being defenseless, nothing can withstand his attack.

Song of the Heart

Life is so old,
Love is so new,
Let me be still
And dream of you.

Let me be still
And speak no word
Save that my warm
Blood sings unheard.

Let my warm blood
Sing low to you.
Life is so old,
Love is so new.

Not Their Way

THOUGH England is the undisputed leader in tailoring the outer man, she is, from the American point of view, lamentably indifferent, as one might say, to the inner man. One of our tall, lanky Yanks found in London that if he would secure underwear sufficiently long, he must buy it wide in proportion. "I know," said the complacent salesman, "that in America you make the clothes to fit the people, but we don't do it that way over here."

Useful Knowledge

I WAS delighted to learn the other day that one could boil an egg with a hole in it and none of the contents would leak out if another hole was made directly opposite. This made exactly the same appeal to me as the advertisement of a bargain sale, but since then I've wasted no end of time looking for an egg with a hole. Tomorrow I shall be driven to puncture a perfect egg in order to test the statement.

Too Fond of Red Tape

MRS. IDA CLYDE CLARK says that men have red tape souls. If this be so, women may be the less vexed by former Ambassador Harvey denying that women have any souls at all. Mrs. Clark instances an official who stood always at the foot of a staircase in a foreign government building though no one could tell why. Further inquiry disclosed that it was an hereditary job in this man's family, the first holder of the position having been placed there to guard the stairway when it had been newly painted generations ago.

EDNA FERBER once observed that women are natural squirrels and store up everything that may possibly "come in handy" in the course of ages. That man is not of so saving a disposition seems clearly proved in the announcement by one of the principal hotels of London, the Savoy, that it is puzzled what disposition to make of the large quantities of clothing left behind by male guests. The theory is that men come to London, are outfitted by English tailors, and discard the suits made-in-America.

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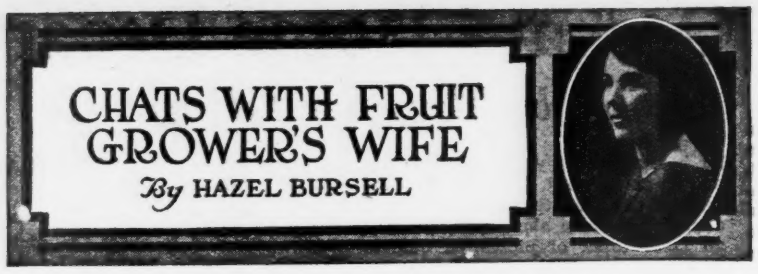

Planning Thanksgiving Dinner

Some hae meat and canna eat,
And some hae nane who want it,
But we hae meat and we can eat
And say the Lord be thankit.
—Robert Burns.

MOST of us are so busy thinking about all the good things that mother will give us to eat on Thanksgiving Day that we lose sight of the true significance of the day—deep and lasting thankfulness for our bountiful harvests, rich resources, fertile lands, a government truly "of the people, for the people and by the people," which guarantees to all the right to the pursuit of happiness and an honest livelihood, and last of all our loving, loyal friends.

It isn't altogether mother's fault if she isn't properly thankful—she hasn't a chance! From the time she bakes her first fruit cake until the dinner is on the table in November, all her time and energy will go into the making of delicacies to satisfy our over-grown appetites. We should contribute something to Thanksgiving besides over-developed appetites. Every one of us, from dad on down to the "leastest," should help mother in every way possible so that she also can enjoy the dinner and be truly thankful.

Do Not Fix too Many Dishes

In the past mothers the country over have tried to do too much for Thanksgiving. They "fixed" a dish of every kind of meat, vegetable, pickle, relish, pie, cake and pudding all for one meal, and were themselves "ready to drop" from heat and over-work when the dinner was served. By the time the members of the family had had two helpings of everything, they, too, were sick from over-eating. Then it falls on mother to administer stomachache medicine and "clear up" after the dinner. Such a program is neither a fitting way to observe Thanksgiving Day nor is it necessary.

The modern mother plans her Thanksgiving dinner well in advance, and at the same time works out a schedule for doing each thing in connection with the dinner. If she is really wise, she includes in her dinner menu several dishes which may be prepared the day before, several days before, or even weeks before. Fruit cakes are best when made six weeks in advance and then packed in sugar until wanted. She will do all her marketing for staple groceries a week or two weeks beforehand, having carefully checked over the recipes to be used and her supplies to ascertain just what is needed. Nothing is more trying to the nerves than to find some necessary ingredient missing when in the midst of the cooking and baking.

The turkey, goose or duck, if not raised on the farm, should be picked out and ordered from some neighbor a week or two before. If you cannot depend on the bird being in prime condition, buy him early and feed him up. Vegetables should be brought from the garden, washed and, in some cases, prepared for cooking the day before. Apples and pears may be selected and polished several days before by other members of the family. Mother will not attempt to do it all herself but will keep her mind clear to direct the work of others to insure efficiency.

Do Housecleaning Early

Very little housecleaning should be done in the last week, except the necessary daily brushing up. Curtains, floors, windows, beds, etc., should be made immaculate the week before and kept that way. The supply of table linens should be gone over and all necessary washing, ironing and mending done a week or two weeks in advance. Don't leave these things till the last minute.

The Menu

It would be impossible to devise a menu which could be used without modification in every part of this country, but I am giving several representative menus which may be varied to include local products. Build a menu to suit yourself, but be sure and have one. Write it out and pin it up where you can see it. Then follow it!

Thanksgiving Menu No. I

Fruit Cocktail
Celery
Roast Turkey Giblet Dressing
Mashed Potatoes Gravy
Creamed Cauliflower
Combination Vegetable Salad
Cranberry Sauce
Bread and Butter
Pumpkin Pie with Whipped Cream
Nuts and Raisins Coffee

Thanksgiving Menu No. II

Oyster Cocktail Salted Crackers
Ripe Olives Celery
Roast Turkey Onion Dressing
Mashed Potatoes Giblet Gravy
Currant Jelly
String Beans Sweet Corn
Fruit Salad
Bread and Butter
Fruit Cake Mints Coffee

Thanksgiving Menu No. III

Orange Cup
Relish Celery
Roast Turkey Chestnut Dressing
Boiled Potatoes Giblet Gravy
Brussels Sprouts
Creamed Onions
Cranberry Jelly on Lettuce
Bread and Butter
Mince or Pumpkin Pie
Bonbons and Salted Almonds
Coffee

Thanksgiving Menu No. IV

Fruit Cocktail
Stuffed Olives Celery
Roast Turkey Oyster Dressing
Glazed Sweet Potatoes Gravy
Cranberry Jelly
Mashed Turnips Tomatoes
Bread and Butter
Thanksgiving Pudding Hard Sauce
Nuts and Raisins Coffee

Thanksgiving Menu No. V

Clear Soup Crackers
Sweet Pickled Peaches Celery
Roast Goose Fruit Dressing
Mashed Potatoes Giblet Gravy
Currant Jelly
Creamed Carrots String Beans
Pineapple Salad
Bread and Butter
Mince Pie Coffee
Candy and Nuts

The menus given above are for four-course dinners, consisting of the soup or cocktail course, main meat course, salad and dessert. A Thanksgiving dinner may be more elaborate, but a well-seasoned, attractively served meal from any one of these menus will satisfy the most exacting appetite and at the same time save mother's time and energy.

In planning a meal, strive to get contrast in color and texture of food in the various courses—beans, tomatoes or carrots add color to the main course, while a dash of paprika or a candied cherry will add color to the salad. The same vegetable or fruit should not be used twice in any one meal. Plan for a variety in flavor—the sour, the sweet, the spicy and the piquant nicely used. Guard against having too many rich dishes, as roast goose, glazed sweet potatoes, mince pie and a rich pudding all in one meal. I have known women to add doughnuts to a meal already over-rich. You may think salads are "frivolous," but you will find that they add a zest to the meal which can be secured in no other way.

Plan Working Schedule

Now, let us plan our working schedule together. First we will bake our fruit cake at least six weeks ahead. We may not plan to serve it for our main meal, but it would be nice for the evening supper. The cranberry jelly can be made a week or two weeks before and sealed in jelly glasses with paraffin. Then it will be already moulded for turning out on a lettuce leaf. Cranberry sauce can be made a day or two before. Candies, nuts and raisins may be purchased ready for the table, or if the candies are to be made at home, make the fondant several days early and form into mints, bonbons, etc., the next day. Do not attempt to make hot bread or rolls for the dinner—your oven will be in use and you will have many other things to do that morning. Bake bread and pies not later than the day before Thanksgiving. Mince pies can be warmed in the oven while the rest of the meal is being served, as most people prefer them warm. If the fruit cake is to be iced, this must be done the day before.

Thanksgiving Day is always on Thursday. Therefore, it would be advisable to get the turkey or goose ready for roasting on Tuesday, if you wish to roast him partly on Wednesday, or on Wednesday at the very latest. He should be singed, scrubbed, drawn and wiped inside with a wet cloth. Cut off the feet and draw the sinews from the thighs if he is an old tough bird. Tie the legs and wings in position for roasting and hang in a cold place. Before putting in the oven, stuff the breast where the crop was with your favorite dressing. If you intend to roast him entirely Thursday morning, be sure to put him in the oven early. Put the giblets on to cook and use the broth thus obtained for clear soup (season well) or for gravy or the turkey stuffing. Chop the giblets and use in the gravy or in the stuffing. If chestnut dressing is used, the chestnuts should be prepared on Tuesday or Wednesday, depending on when the roasting begins.

Divide Up Your Work

Select and trim and wash all fresh vegetables the day before. Have some feminine member of the family begin peeling potatoes, scraping carrots, peeling turnips, etc., early on Thursday. Have one of the boys bring up from the fruit house and open all jars of needed canned fruits and vegetables. He may shortly before dinner also open cans of olives and pineapple. The daughter of the house may superintend the laying of the table and the arrangement of the fruit or floral centerpiece. She can also arrange the salads on individual plates if there are to be salads. Someone will need to stay near the stove basting the turkey, making gravy (a last minute dish), cooking and seasoning vegetables, making coffee and the pudding (if there is one).

Whoever arranges the table will look after the serving dishes. The dinner plates will be warmed, as will all service dishes and platters for hot things. The salad dishes will be cold, and salads will be kept in a cool place till needed. They should not be arranged till toward the last. Pie plates, cups and saucers, and dessert silver may be placed on the side table or buffet in the dining room ready for use.

Garnishing is important, especially for the turkey or goose. A simple garnish is to arrange celery, parsley and lettuce leaves or any two of them around the bird. Fried oysters and green leaves make a nice garnish for the turkey. Blanched chestnuts and sausage cakes are often used, the cakes being used in groups of three. Plain or stuffed olives and jelly cubes are suggested for roast duck. Halves of oranges in the skins and green leaves make a pretty garnish for duck but they would have to be removed before carving. For roast goose, cooked apple rings with jelly centers are appetizing looking.

"Family Style" Service

Service in most farm homes is "Family Style." For this the cocktail or soup is on the table when the guests are seated. All the silver up to the dessert course would also be on the table, together with a service plate under the cocktail cup and the water glass at the tip of the knife. Knives and spoons are placed to the right of the plate, with the forks and the napkin to the left. Knife blades are turned toward the plate. Place cards, if used, would be at the top of the cover or on the napkin. All relishes, celery, olives, crackers, nuts and candy may be on the table in attractive dishes when the guests are seated.

As soon as the first course has been finished, some member of the family will remove the cocktail cup and plate, removing from the left, two plates at a time. Then the roast, dressing and gravy should be placed before dad's plate for carving and service. He may serve the vegetables, also, but they may be passed around in serving dishes if that method is preferred. The salads will be placed in front of each cover, with this course, or they may have been placed on the table from the beginning. When this course is finished, the service dishes and all plates and silver will be removed. Crumbs will be brushed up.

Mother Serves Dessert

The dessert and dessert plates will be placed before the hostess (mother) for serving. The coffee perculator and cups and saucers will also be placed before her. The cream and sugar may be passed around, or mother may ask each guest in turn which they prefer and place it in the cup before pouring the coffee. In case of limited space, the coffee may be poured on the side table and passed to each guest.

Each member of the family should plan to make some contribution to the conversation—something interesting, cheerful and witty. Good conversation and a hearty laugh are valuable aids to digestion as well as necessary adjuncts to the enjoyment of an excellent dinner. Linger awhile over the last course to get the utmost out of your dinner.

Thanksgiving Dinner Recipes

DUE TO the limited space, I shall not be able to give recipes for every dish on the Thanksgiving menu, so I am giving proportions and methods of making for the more unusual foods. You will not need recipes for certain things. For instance, a combination vegetable salad may consist of any or all of the following vegetables mixed in any proportion you prefer—string beans, canned or fresh tomato, canned peas, cubes of carrots, celery, onions, cucumbers. Tiny cubes of cheese add zest to the salad. A fruit salad will be made up of any fruit you have on hand—apples, oranges, grapes (skins removed), pineapple, dates, nuts. Sugar and orange juice make a nice dressing for a fruit salad. For a pineapple salad, lay a ring of pineapple on a lettuce leaf, and fill the center with grated cheese or cottage cheese and nuts, or whipped cream, nuts and a preserved cherry. Fruit cake recipes and those for salad dressings have been given in this column in other issues of the magazine.

Chestnut Stuffing

3 c. French chestnuts
½ c. butter
1 t. salt
1 t. pepper
¼ c. cream
1 c. cracker crumbs

Shell and blanch chestnuts by soaking in hot water, pouring on boiling, until skins will slip off. Cook meats in boiling salted water until soft. Drain and mash, using a potato ricer. Add one-half of the butter, salt, pepper and cream. Melt remaining butter and mix with cracker crumbs, then combine mixtures. Use to stuff breast of turkey.

Oyster Stuffing

1½ c. stale bread crumbs
1½ c. cracker crumbs
½ c. melted butter
1 pt. oysters
2½ t. salt.
¼ c. oyster liquor
½ t. pepper
¼ t. mace

Mix bread and cracker crumbs and add melted butter, oysters with tough muscles removed, oyster liquor and seasonings.

Cranberry Sauce

Pick over and wash 3 c. of cranberries, using warm water with a teaspoon of soda if the berries are inclined to be bitter. Rinse and drain and put in granite kettle with 1¼ c. of sugar and 1 c. of boiling water. Simmer for about 10 minutes, skim and cool for serving.

Cranberry Jelly

Pick over and wash 1 qt. of cranberries as for cranberry sauce. Then add 2 c. boiling water and boil for about 20 minutes. Rub through a fine sieve, add 2 c. hot sugar and cook for 5 minutes more. Turn into glasses and when cold cover with paraffin and store till needed. Unmould from glass on a crisp lettuce leaf.

Sausage Stuffing

1 small onion
2 T. butter
½ lb sausage meat
4 doz. French chestnuts
2 t. salt
⅛ t. powdered Thyme
2 oz. bread crumbs
2 t. parsley, finely chopped
¼ t. pepper

Cook finely chopped onion in butter 3 minutes; then add sausage meat and cook 5 minutes. Boil chestnuts and mash half of them. Add to first mixture with remaining ingredients, and when blended add whole chestnuts.

Fruit Stuffing for Goose

Fill the body cavity of the goose or duck with fresh or canned fruits and nuts when bird is about half roasted. Canned prunes, pears, raw apples and walnuts are a good combination. The fruit imparts a delicious flavor to the bird, and absorbs sufficient of the meat juices to make an excellent dish in itself.

Roasting the Turkey

Dress, clean, stuff and truss turkey. Place on side on rack in roaster, rub entire surface with salt, and spread breast, legs and wings with ½ c. of butter rubbed until creamy with ¼ c. flour. Dredge bottom of pan with flour. Place in hot oven, without pan lid, and when flour on turkey begins to brown, reduce heat and baste every 15 minutes until turkey is cooked. For basting, use ½ c. butter melted in ½ c. boiling water and after this use the fat in the pan. Pour water in the pan if needed to prevent flour from burning. Turn turkey frequently. If bird browns too fast cover with buttered paper or place roaster lid on pan. Remove string and skewers before serving, and garnish.

Gravy

Pour off liquid in pan in which turkey has been roasted. Skim off 6 T. fat and return fat to pan and brown with 6 T. flour; pour on gradually 3 c. stock in which giblets have been cooked or use liquor left in pan. Cook 5 minutes, season with salt and pepper, strain. For giblet gravy add heart, liver and gizzard finely chopped.

Oyster Cocktail

8 small raw oysters
1 T. tomato catsup
½ T. vinegar or lemon juice
2 drops Tabasco
1 t. chopped celery salt
½ t. Worcestershire sauce

Mix ingredients, chill thoroughly and serve in cocktail glasses, or cases made from green peppers (sweet peppers) placed on a bed of crushed ice. This recipe serves one person. Horseradish root grated may be added.

Fruit Cocktail

Remove pulp from grapefruit and mix with grated pineapple, bananas cut in slices and slices cut in quarters, and oranges cut in small pieces with sharp knife. Sweeten with powdered sugar, place in glasses, garnish with a Maraschino cherry or other preserved red fruit, and chill. Serve cold.

Glazed Sweet Potatoes

Wash and pare 6 medium-sized potatoes. Cook in boiling salted water until soft. Drain, cut in halves lengthwise, and put in buttered pan. Make a syrup by boiling 3 minutes ½ c. sugar and 4 T. water and add 1 T. butter. Brush potatoes with syrup and bake until brown, basting twice with syrup.

Thanksgiving Pudding

½ c. suet
½ lb. chopped figs
2½ c. bread crumbs
¾ c. milk
1 c. brown sugar
1 t. salt
¾ t. cinnamon
½ c. walnut meats
½ c. seeded raisins
½ t. nutmeg
2 T. flour
4 eggs
2 t. baking powder

Chop suet and work with the hand until creamy, then add figs. Soak bread crumbs in milk, add eggs well beaten, sugar, salt and spices. Combine mixtures, add nut meats and raisins dredged with flour. Sprinkle over baking powder and beat thoroughly. Turn into a buttered mould, steam 3 hours and serve hot with hard sauce.

Hard Sauce

⅓ c. butter
1 c. powdered sugar
½ t. lemon extract
⅔ t. vanilla

Cream butter, and add sugar gradually while beating constantly. Then add the flavoring.

Orange Cup

2 oranges
2 bananas
½ c. shredded cocoanut
½ c. powdered sugar

Cut the oranges in small pieces with a silver knife, and slice and quarter the slices of bananas. Add powdered sugar and cocoanut. This amount will serve approximately four persons. Serve cold in cocktail glasses or sherbet cups.

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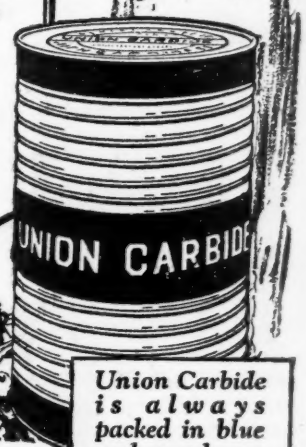

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Tree Surgery for the Fruit Grower

(*Continued from page* 16)

not tear it, and screw the nut on the end of the bolt. If the proper sized bit is used, no washer is necessary. If the bolt is drawn snugly up to the wood, it will be entirely grown over in two or three years. With the lag screw, the hole is not bored entirely through the tree. Usually a lag screw four or six inches in length and about one-half inch in diameter is the proper size. The hole should be the size of the core of the screw. This will necessitate turning the screw into the wood. When they have been turned snugly into place, the two are connected by the wire and the wires twisted until taut (see Figure 3). Where three or more limbs are to be braced, it may be found best to use a heavy harness ring in the center and run wires radiating from this to the different limbs.

Cost of Bracing Trees

A cost account was kept of the bracing of seven trees. These trees were only 13 years old and perhaps did not require as much material as older trees, but the figures would not be materially changed were the work to be repeated elsewhere. The figures are:

2 men 2½ hours, or 4⅘ hours at 30 cents	$1.40
19 lag screws—	
15 screws, 4-in., at 5 cents	.75
4 screws, 6-in., at 6 cents	.24
Bending same	.10
5 lbs. No. 9 galvanized wire at 4½ cents	.23
3 iron rings at 2 cents	.06
	$2.78

7 trees at $2.78, or about 40 cents per tree.

What cheaper tree insurance is there than this? For the price of a peck of good apples, a tree may be kept in the productive class when otherwise it would be a cripple or else entirely destroyed.

Natural Braces

When a weak crotch is noted early enough and yet it seems too late to correct the fault with the saw, sometimes a natural brace may be secured by intertwining two small branches from opposite limbs, forming a natural brace much like a rung in a ladder. Figure 4 shows a good representation of such a brace. I know of one Pennsylvania grower who carries this to the extreme. He takes a sucker sprout or small branch from one limb and wraps it once or twice around the adjoining limb, fastening the end with a brad. Some trees having four or five such braces look as though the owner had started basket weaving.

You will notice nothing has been said about the filling of cavities with cement. This has been purposely omitted. From what I have seen of such work as done by orchardists I feel their efforts have been worse than wasted. Unless all the decayed wood is removed from a cavity and the concrete is so put in as to prevent the entrance of water, decay will continue under the concrete. Such is the case 1 all the cavity filling done by farmers which I have inspected. On the other hand, I do not believe the fruit grower is justified in paying from $10 to $20 per tree for the work of experts in cavity filling if he wishes the balance of his orchard account to be on the right side of the ledger. See that the young trees are properly started, take care of broken limbs by careful cutting and sanitary care of the cuts so made, and brace any trees which need strengthening, but leave cavity filling for the trees on the front lawn.

Double Deceiver

The maid had been using surreptitiously the bath tub of her employer, an elderly bishop. He was a bachelor, very fastidious about his toilet, and desired the exclusive use of his tub.

He reprimanded the maid with much indignation:

"What distresses me most, Mary, is that you have done this behind my back."

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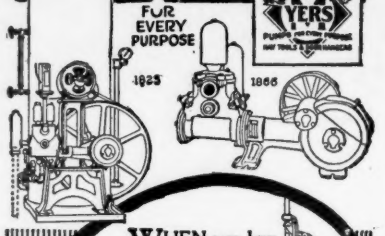

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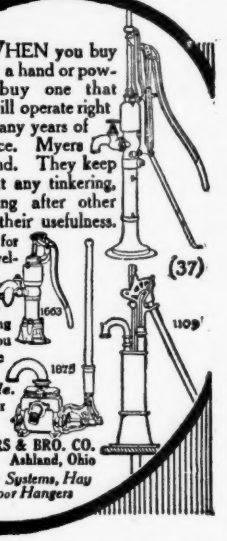

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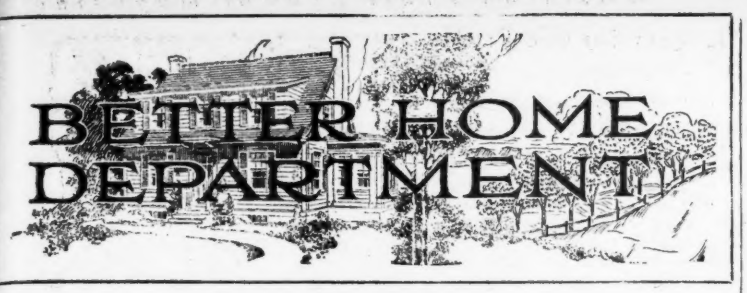

Some Fall Jobs

by E. W. Lehmann

EVERY man knows that it does not pay to wait until it starts raining to begin thinking about repairing the roof. Nor does it pay to wait until severe cold weather to remember that the furnace has not been cleaned out and the smoke pipe needs replacing. A calendar of jobs is a great help in carrying out a plan. More things are done if a definite list is before us.

"Do it on schedule time" might well be adopted as a slogan by all of us. The fruit grower who anticipates his needs and makes a schedule by which the seasonal jobs are to be carried out is a wise man. By planning ahead, more will be accomplished and a certain satisfaction will be realized that cannot be felt by the man who follows a hit and miss plan or no plan at all. When a job is done "on time," there is less worry, less waste, and usually less cost. A few jobs might well be considered at this time.

Painting

Early fall on warm, dry days is a good time to paint. Usually it is not so dusty and the gnats are not bad at this time of the year. The life of many buildings and machines can be greatly increased by a protective coat of paint. Too many people think of paint as being applied primarily to improve the appearance of the property. While the satisfaction of having a well appearing group of buildings is worth the price of the paint, the protection is worth even more. Farmer's Bulletin 474 on the "Use of Paint on the Farm," published by the United States Department of Agriculture, is a very good source of information on this subject.

The object to be painted, as well as the kind of paint, are both factors to be considered. To get best results, varnishes and enamels should be applied only when it is warm and dry since they flow more evenly under such conditions. If a car is to be painted, to avoid streaks it is best to paint it under shelter in a warm place. The following suggestions may be helpful to the inexperienced painter, and if followed may mean a good job rather than a poor one:

1. For outside work note weather conditions and remember dry, sunshiny, warm days are best for painting. Wet, cold days are to be avoided.
2. Be sure that the surfaces to be painted are dry and clean. Moisture causes paint to blister, and paint on dirty surfaces is of little value because it peals off.
3. Spend considerable time in stirring paint. It should be smooth and of uniform color and consistency when applied. One-half hour is not too long to spend in stirring a five-gallon can of paint.
4. Make the paint go as far as possible and don't spare the brush. It is best to put on several coats rather than spread it on thick.

Many farm buildings can be protected, as well as improved in appearance, by an application of whitewash. Whitewash has a certain cleansing value for poultry and hog houses. This is a good time of the year to apply whitewash to the interior of the poultry house. Ordinary whitewash can be made by slaking quicklime with water. It takes about a gallon of water for each five pounds of lime. When water is poured over the lime, cover it and allow it to stand for about an hour. Additional water can be added to bring it to the proper consistency to apply either with a brush or with a sprayer.

For those who desire a better quality of whitewash, which adheres more like paint and would be fine for basement walls or out-buildings, the following well-tried recipes are submitted:

Factory Whitewash. (Interiors.) For walls, ceilings, posts, etc.:

(1) Sixty-two pounds (one bushel) quicklime, slake with 15 gallons water. Keep barrel covered until steam ceases to rise. Stir occasionally to prevent scorching.

(2) Two and one-half pounds rye flour, beat up in one-half gallon of cold water, then add two gallons of boiling water.

(3) Two and one-half pounds common rock salt, dissolve in two and one-half gallons of hot water.

Mix (2) and (3), then pour into (1) and stir until all is well mixed.

This is the whitewash used in the large implement factories and recommended by the insurance companies. The above formula gives a product of perfect brush consistency.

Weatherproof Whitewash. (Exteriors.) For buildings, fences, etc.:

(1) Sixty-two pounds (one bushel) quicklime, slake with 12 gallons of water.

(2) Two pounds common table salt, one pound sulphate of zinc, dissolved in two gallons of boiling water.

(3) Two gallons skimmed milk.

Pour (2) into (1), then add (3) and mix thoroughly.

Put the Machinery Under Shelter

On nearly every farm machines can be found this time of the year that are unprotected and in need of repairs. The life of such machines can not only be increased, but greater efficiency will result by taking care of this work promptly. The life of many machines can be increased 50 to 100 per cent by protection and a little care at the right time.

It is always best to make repairs early to avoid delay when machines are needed for field work. At the end of the season is the best time to check up on needed repairs. All machines should be cleaned up and put under shelter. If time will not allow repairs to be made now, they can be taken care of later. It is just as important to paint the implements as it is to paint the buildings. The wooden parts at least should be painted. All polished or bearing surfaces liable to rust should be coated with heavy grease.

Look to Fuel Supply and Heating Equipment

Where a wood lot is available, now is a good time to cut out all dead timber for firewood. Every fruit grower realizes the value of apple wood for fuel; old unproductive trees might well be utilized for this purpose. Much material that would ordinarily go to waste can be utilized for fuel. If coal is needed, ordinarily the earlier it is secured the better. The price is usually lower in the early fall, and the roads are better.

If the furnace was not thoroughly cleaned out during the summer, it should be done before the severe winter weather begins. A furnace that is not clean will waste lots of fuel due to the radiating surfaces being coated with soot and fine ashes, and it will be more difficult to keep the house comfortable.

If hot water is provided from a coil in the furnace, it might be well to clean it out or renew it at the same time. Only a pipe wrench and a wire for cleaning is needed for such a job. To have a plumber come out to do it will mean considerable expense.

Most furnaces can be easily cleaned out through the special openings provided and the smoke pipe opening. Use a scraper and brush and thoroughly clean all surfaces and smoke passages. Take off the smoke pipe and see that it is clean; also see that the chimney is clean where it goes in. If the chimney is badly coated with soot, it would be well to burn it out some rainy day when the roof is wet and there is little danger of fire. This can be easily done by burning newspapers in the check draft opening of the smoke pipe.

Provide Window Cooling Box

The window cooling box is the simplest method of keeping food cool to avoid spoiling during the winter months. If such a box was used last year, now is the time to get it painted and installed for use during the next few months. Such a box can be easily made of boards 12 inches wide. The size will depend on the window. It is best to make it just the width of the screen so it will fit in place and the lower sash may be pulled down if desired. Three shelves will fit in very nicely, one on the level with the window shelf and two above. Ventilators can be provided for use during mild weather. In extremely cold weather, these can be closed and the window sash raised to allow heat from the house to enter and thus prevent milk and other food from freezing.

Repairing the Pump

To be out of a satisfactory water supply during the winter is very serious, so due attention should be given the pumping equipment at this season of the year. It is usually considered poor judgment to look for trouble; however, when the weather and time permit, it is well to thoroughly inspect and overhaul the pump, for although it has been used for several seasons with satisfactory results, it has probably been more or less neglected.

When a pump is overhauled, it is always desirable to have on hand new leathers so that a complete set can be installed. The valves should be examined to see that they are seating properly. It is sometimes necessary to remove the valve seat and make it smooth by means of a file or block of wood and emery cloth. The valve may also be ground in place if it is not of the glass or rubber type. If there are defective rods and pipes, now is the time to replace them.

If the trouble of freezing of the

(*Concluded on page* 32)

Saving mother's eyes

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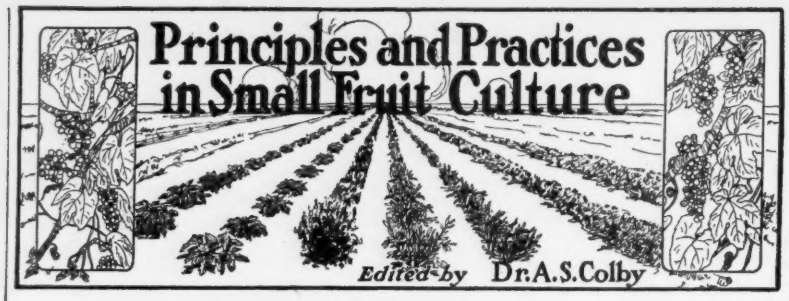


Is Small Fruit Growing a Good Proposition?

THE WRITER has often been asked the questions, "Why should we grow small fruits? Can one be fairly certain of good financial returns? Is the small fruit business being overdone? Are there too many difficulties to be overcome to make a success of the venture?" These questions often come from retired farmers who wish to be out-of-doors and in close touch with growing plants even if they have moved to town; from young men just starting out for themselves; from farm women anxious to make some money on the side.

What Are the Returns?

In answering these questions the writer has always encouraged the inquirer, other conditions being favorable, to make a beginning in growing small fruits. Of course, one should enjoy his work if he is to gain the most pleasure and profit from small fruit culture, as in any other line of endeavor. While successful small fruit growing calls for a certain degree of skill and patience, anyone interested and persevering enough to stick through a season or two of crop failure will reap a rich reward for his trouble. The growing of small fruits is an occupation in which the profits are uncertain, but they are often very large. We secure over five tons of grapes to the acre at the Urbana Station year after year. At a selling price of four to nine cents per pound, a grower may make a reasonable profit on grapes. Gross returns of from $300 to $500 per acre are easily possible in growing black raspberries, with other small fruits in proportion.

Why Have a Small Fruit Garden?

A decision to engage in small fruit growing should also depend upon the size of the plantation the prospective grower has in prospect. While most farms, worked either by tenants or owners, should have small fruit gardens, the last census shows that grapes, for example, are being grown on only 36 per cent of the farms in Illinois. With plenty of land available, a choice of a favorable site, the original cost of planting relatively small, and comparatively little trouble and expense in its maintenance compared to the benefits, there is every reason for reaching a decision to plant a small home fruit garden.

From the Commercial Standpoint

The decision to take up small fruit growing as a commercial proposition depends upon, first, a genuine interest in horticulture in general, and small fruit in particular; second, a keen desire to learn the details of successful management; third, good judgment in choosing a locality and site; and, fourth, a good business head in running the business. While the market demand for the different small fruits is fairly constant, some are more sought after than others, and in some seasons local conditions are such that careful attention is necessary to dispose of all the fruits at a profit. Taken all in all, however, there is money in small fruits, over a period of years.

Overdoing Small Fruit Planting

Is the small fruit business being overdone? One would say no, when studying the good prices being paid for raspberries, strawberries and grapes this season. There was in some sections a surplus of fruit of poor quality but good fruit always sold to advantage.

While small fruits have an important place in diversified farming, they often constitute the only crop being grown. It was formerly thought unwise to plant an extensive area unless an assured market was close at hand. In recent years, however, there has been a gradual increase in small fruit planting.

Overcoming Difficulties in Small Fruit Production

Are the difficulties too great in growing small fruits? No greater ones exist than in any agricultural business. One important fact needs mention, however, in this connection. In spite of the fact that the consuming public is gradually being educated to the value of small fruits, the acreage of small fruits has, according to census reports, been steadily decreasing over the whole country, with the exception of certain regions of the Pacific Coast where the loganberry has come into sudden popularity. Bush fruits, especially, have decreased heavily in acreage.

What is the reason for this gradual drop in acreage and production in face of public demand for the fruit? The writer believes it is due chiefly to the increasing prevalence of serious diseases. Some of the diseases common to raspberries, such as crown gall, anthracnose, bramble streak, leaf curl and mosaic, have already been treated in this column. Other diseases affecting other small fruits will be taken up at a later date. Part of the difficulty lies in the fact that comparatively little of the nursery stock available is disease-free. Infected nursery stock carries disease far and wide into new plantations, perhaps disease-free up to that time. After a few years the plantation becomes unprofitable and is abandoned, hence the decrease in acreage as shown in the census reports.

The writer is one of several experiment station men located in different states working on this problem. He believes that by the selection of disease-free stock, true to name, which may be used as "mother plantations" in increasing such plants for general distribution, growers may in time buy "certified" stock for planting on new ground. In this way it is believed that plantations may be made productive and profitable.

Other limiting factors or difficulties which must be surmounted in successful small fruit growing relate to the selection of a favorable locality and site, the choice of kinds and varieties most likely to succeed there, and the practice of scientific methods of care and management in producing and selling the crop. These topics will be fully discussed in this department in succeeding issues of the AMERICAN FRUIT GROWER MAGAZINE.

Let's Boost National Apple Week

NATIONAL Apple Week has become a regular institution. In 1905 Captain James Handly, of Quincy, Ill., originated the idea of National Apple Day. In 1913, the International Apple Shippers' Association enlarged on the idea and established National Apple Week. Dealers and growers all over the country are being asked to promote the use of more apples this year during the week October 31 to November 6, inclusive. Notwithstanding the publicity given other fruits, the apple still remains the leading fruit, but while other fruits have increased in consumption in relation to the population, apples have decreased in use in comparison with the population. The raisin growers doubled the use of raisins in the last 10 years. The consumption of oranges has increased much faster than the population. Apples, on the other hand, have decreased in per capita consumption. In 1890, the per capita consumption was 2.17 bushels per person, while in 1920, it was only 1.79 bushels per person.

What is the reason for this? A lot of things might be said, but probably the correct conclusion is that the growers of citrus fruits and raisins are well organized and are in a position to boost the consumption of their products, while apple growers have done little in this direction. The apple growers as a group have apparently been waiting for someone else to solve their marketing problems and, as usual in such cases, the job has not been done.

The trade organizations are doing a splendid piece of work in promoting National Apple Week. It is helping their members, of course, but it is also helping fruit growers just as much. Apple Week should be vigorously supported by every apple grower in America. Most growers underrate their influence. If every grower will do all he can "every day in every way" during Apple Week, the combined result will be surprising. By such united action, apple growers can materially increase the consumption of their product, and as a result, both demand and prices will be improved.

THE OFFICE of the AMERICAN FRUIT GROWER MAGAZINE is an interesting place. We receive letters from every state in the Union and from many foreign countries, including Australia, New Zealand, South Africa, Great Britain, Canada and others.

We meet visitors from all over the country, as well as from foreign countries. Just recently we had a most interesting visit from Herbert J. Rumsey, of New South Wales, Australia. He is a practical fruit grower, a holder of several horticultural offices, author of a number of books, and a seed and plant merchant.

Mr. Rumsey says that the fruit land of Australia, which is larger than the United States, is from 2000 to 3000 feet above sea level. Certain sections are well adapted for fruit culture, while others are not. The Rome Beauty, Jonathan, Delicious and Gravenstein are popular varieties. The Granny Smith, a chance seedling, is quite popular. Being of good quality, an excellent keeper and edible over a long period, it brings good prices in Australia and is quite popular in England. Mr. Rumsey placed some stock with a California nurseryman several years ago. The boat on which Mr. Rumsey sailed to England carried about 27,000 boxes of apples, or about 50 cars.

Mr. Rumsey said that the AMERICAN FRUIT GROWER MAGAZINE helps him in his work, especially in regard to spraying, notwithstanding the fact that it is summer in Australia when it is winter here.

THE ENTIRE Mesopotamian date crop in normal years averages about 91,000 metric tons annually. Researches on the shedding of immature dates indicate that about 90 per cent of the fallen dates are shed owing to physiological reasons, and about 10 per cent owing to insect attack.

The motorist who is least considerate of foot passengers is loudest in his denunciation of careless drivers when he happens to walk a mile.

Ramblesof a Horticulturist

(*Continued from page* 12)

phosphatic fertilizers are used by practically all the growers, and, in addition, many of them use complete fertilizers carrying potash as well.

Spraying

Insects and diseases are not as bad in New England as in many other fruit sections. No doubt this is largely responsible for the general health and old age of the trees. San Jose scale is kept in check by the cold winters and can be controlled readily with lime sulphur applied every

A bridge-grafted apple tree in Massachusetts

year or two. I did not hear apple blotch mentioned. Root rots and canker diseases apparently give little trouble. Pear blight, while present in lower New England, is not at all serious compared with its damage in other sections. The Transparent apple grows without fire blight in New England, so far as I could see. Codling moth gives considerable trouble. Apple scab is probably the worst pest. Peach and apple borers are bad. Many station men and growers believe that P. D. B. injures young trees, and many growers tear down the mounds around the trees with hoes three weeks after application of P. D. B. Brown rot causes some damage in lower New England but is held in check with dust and sprays. The gypsy moth did much damage seven to eight years ago but is not serious now. The Oriental fruit moth and the Japanese beetle are giving serious concern at the present time.

Rodents

Mice are quite troublesome because of heavy snows. Wire screen protectors are used and many growers leave them around the trees all summer. Many trees are girdled badly and it is quite common to see bridge grafting, as shown in the picture. The woodchuck does a lot of damage at times, and growers are much interested in the new treatment with calcium cyanide.

Game Animal Problems

About 10 years ago when I visited New England, the deer question was a troublesome one. The animals did much damage by hooking their horns in the young trees and tearing them to pieces. They seem to be particularly fond of Red Delicious trees. The game laws protected the deer and growers were in a serious predicament.

I am told that a few years ago a New England farmer annihilated a mink and her family out of the hunting season for damage done his poultry. The case finally reached the Supreme Court, but the farmer won in every instance on the contention that under the common law he had a right to protect his property. I was told this man lost his farm in meeting the expenses of this case. If this is true, the New England farmers owe him at least a farm for the service rendered them.

As a result of this court decision, New England game laws have been so modified that growers can now protect their property. In all of the states, farmers can shoot deer any time they are doing damage, the only requirements being that a kill be reported to the local game warden so that he may dispose of the carcass. Often he takes a hind quarter and leaves the farmer have the rest. In Vermont, they have gone a step further and have established zones around orchards in which deer can be killed any time, their presence in such zones indicating evil designs on their part. In some New England states, the fruit growers can get damage from the state for injury done by game animals, the amount being fixed by a committee.

Grouse also do considerable damage. These birds know how to tell fruit buds from leaf buds, and they eat fruit buds in the winter because they are richer in food elements. Grouse may now be handled in the same way as deer: The New England growers are apparently satisfied with the legal aspects of the game animal problem at the present time, though there are still too many deer and grouse to suit them.

Marketing Problems

I was much impressed by the New England marketing situation. The growers are much interested in that subject. Many growers have excellent packing houses and some of them are fitted with the most modern grading and handling equipment. Some growers have cold storage plants and many have excellent cool storages.

The impression has prevailed that boxes are adapted only for northwestern fruit, but the New England growers have disproved this. The standard bushel box, resembling the gardener's bushel box, is used all over New England. S. L. Davenport,

Barbara Peck, of Shelburne Falls, Mass., a specimen of the best crop that New England grows, the McIntosh apple not excepted

president of the Massachusetts Fruit Growers' Association, is authority for the statement that five years ago 90 per cent of the apples stored in Boston were in barrels, and that last winter 80 per cent of the apples stored in Boston were in boxes. This box is 17½ by 17½ by 7 1/16 inches, inside measurements. The use of this box is exerting a vast influence for better packing, and it is also encouraging better methods of production. The New England growers have wonderful opportunities in roadside marketing, but there were not as many roadside stands as I expected to find. Growers in many localities do a big business with tourists and tourist resorts. A good co-operative is in existence at Littleton, Mass. The Maine Fruit

(*Concluded on page* 34)

Don't Pay Freight on Water

Spray with

Niagara

Soluble Sulphur Compound

Shipped Dry—You add the Water

For twelve years acknowledged by Fruit Growers everywhere as

The Best Dormant Spray

for the control of San Jose Scale, Peach Leaf Curl and other orchard troubles.

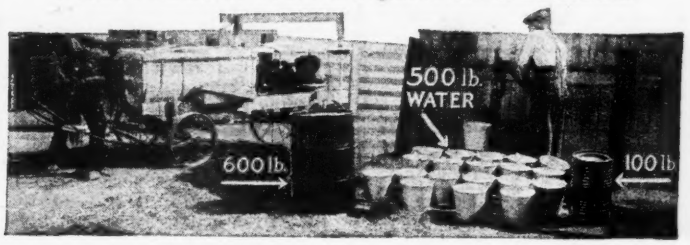
This Comparison Shows its Economy

100 lbs. of Niagara Soluble Sulphur Compound is equal to a 600 lb. barrel of Lime Sulphur Solution.

A 100-lb. drum is easier to haul and handle. There is no freight to pay on 500 lbs. of unnecessary weight—no barrel to return—no leakage—no evaporation—no crystallization—nor loss from freezing. Air-tight drums keep Niagara S. S. C. indefinitely. Every pound paid for is a pound of effective spray material with no solid matter to clog valves, sieves, pumps and nozzles.

Niagara S. S. C. will clean your orchard and give your trees a chance to produce quality fruit next year. See your dealer or write for Soluble Sulphur booklet today.

Niagara SPRAYER COMPANY
MIDDLEPORT, N. Y.
Pioneer Manufacturers of Dusting Machines and Materials



100 lbs. of N. S. S. C. makes as much dormant spray as a 600-lb. bbl. of Lime Sulphur Solution. Why pay freight on all this water?

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Beekeeping for the Beginner

Bee Behavior and Winter Protection

by H. F. Wilson

TEMPERATURE is a very important factor in the life and development of the honey bee. Next to the food stimulus, changes in temperature probably influence the life of the bee more than any other factor.

For convenience, we will start at a high temperature and explain the action of the colony as the temperature goes down. The temperature at which bees normally rear brood is from about 90 to 94 degrees Fahrenheit. When the temperature goes above this point in the summer time, the bees fan their wings to create a circulation of air to hold the temperature down. Should the reader be interested in finding out how this is done, simply get hold of a drone bee and hold it by one hind leg. During its efforts to escape a very decided cool draft will be created by the action of the wings.

When the temperature goes below 90 degrees Fahrenheit around the cluster, the bees cause an increase of heat through body movements. When the temperature gets below about 60 degrees Fahrenheit in the hive, the bees are no longer able to keep up the temperature without forming a cluster, that is, they group themselves into a more or less spherical mass, depending upon the shape of the brood chamber, and, while the temperature outside this cluster may go down very low, the temperature within the cluster will be kept up by muscular movements of the bees. The outer wall of the cluster, which is composed of a continuous layer of bees, heads inward, acts as an insulator, and the bees from the inside are continually changing places with those in the outer wall so that those on the outside will not become completely chilled.

If we could inspect a cross section of this cluster, we would find that within the cluster bees have crawled into all of the empty cells within the limits of the cluster, and that the bees between the frames are gathered in a rather compact mass. If the outside temperature keeps on going down, the cluster keeps on contracting until a point is reached where the cluster cannot be made smaller. If the temperature starts to rise, the cluster begins to expand, and when a point near 60 degrees is reached again, the cluster is broken and the bees move around freely within the hive.

An individual bee becomes almost completely chilled at 45 degrees Fahrenheit and will fall from the combs. If the temperature does not rise again within a number of hours, it will die. For keeping up the temperature within the cluster, it is necessary that the bees have good stores, as a considerable amount of honey is necessary if the bees have to keep up the cluster temperature within when the temperature outside is near zero.

Providing Satisfactory Overcoats for Bees During the Winter

How many of our readers have made plans to see that the bees are well covered during the coming winter and following spring? It is well to have the bees protected in the fall also, but it is much more important that they be well protected in the winter and spring. It does not make a great deal of difference whether the bees are in the cellar or out-of-doors so long as they have the right kind of protection.

Packing bees out-of-doors usually works out better than wintering the bees in the cellar, for the reason that when the bees are packed out-of-doors in the fall such protection is usually left on until May of the following spring. Bees wintered in the cellar are usually set out early in the spring without any protection, and it is much more difficult for these bees to keep up the brooding temperature than it is for those who have some packing. Therefore, if you have materials for making packing cases, it is really more preferable that bees be packed out-of-doors than put in the bee cellar.

Bee Cellars

It is very easy to give definite specifications for a bee cellar, but it is much harder for the beekeeper with only a few colonies to secure a bee cellar that has all of the requirements specified. Given proper conditions, bees will winter in a cellar in perfect condition without there being a loss of very many bees.

To begin with, the cellar should be absolutely dark. Second, it should be so insulated that it will not change to any great extent with the changes of temperature out-of-doors. If a constant temperature of about 45 to 50 degrees Fahrenheit could be maintained throughout the entire winter, this condition would be ideal. Cold cellars are always damp cellars, and if the temperature is allowed to go below freezing within the bee cellar, frost will form on the cover within the hive, which is very detrimental to the bees, and they lose a great deal of their vitality in trying to keep warm and dry. For every gallon of honey stores used, the bees give off about a gallon of moisture. If the temperature within the cellar is low, this moisture cannot escape from the hive and it condenses on the inside. Many beekeepers follow a practice of putting trays of shavings or sawdust above the colony, which absorbs the moisture given off. This, however, is of very little real benefit unless the temperature within the cellar is constantly near 45 degrees Fahrenheit or above.

Very frequently beekeepers who keep their bees in the basement of the house, or in a fruit cellar, are more successful in wintering bees than the many beekeepers who have winter cellars. The explanation for this is quite easy. The basement of the house has a continuous medium temperature, while the regular bee cellars are not properly made or provided with heat, and, as a result, the bees suffer from continuous fluctuating temperatures of great range. It is also absolutely necessary that the bees have honey stores free from pollen and gums. Otherwise, dysentery is bound to occur and severe losses result.

Packing Bees Out-of-Doors

If you have space and materials for making packing cases, by all means pack your bees out-of-doors. There are a number of very good reasons why this should be done. Bees should ordinarily be packed in late October or early November, and should be left in the packing cases until the spring temperatures are continually up to 60 degrees Fahrenheit or more. This will be from November to the middle of April or the middle of May, depending upon how far north the beekeeper lives.

The packing case should be made so that it will hold at least six inches of packing on the top and bottom and four sides of the hive. A small, narrow tunnel should be made from the front of the hive to the outside of the packing case so that the bees can fly out at all times when the temperature is sufficiently high. Investigations carried on at the University of Wisconsin show that when the temperature is 48 degrees in the shade, and the sun is shining, bees may fly quite freely. As such temperatures are likely to occur a number of times during the late fall and early spring, when there is no snow on the ground, it is well worth while for the bees to have this opportunity for flight. Leaves or shavings make satisfactory packing material, but they should be thoroughly dry, and the packing cases must be sufficiently tight so that water cannot leak in and form ice.

Winter Stores

Experiments carried on in the Beekeeping Department of the University of Wisconsin show that the average amount of stores required for an individual colony is seven pounds, while the maximum amount may be 15 pounds. It is therefore important that each colony of bees have at least 20 pounds of stores for winter. Bees packed out-of-doors may use as much as 30 pounds per colony, depending upon whether or not they are well protected by packing. Colonies having six to eight inches of packing around the sides and at the top and bottom will winter over very nicely on from 15 to 20 pounds of stores. Colonies wintered out-of-doors with no packing may use as high as 30 pounds of stores.

Many colonies are lost every winter through starvation. In other words, the beekeeper puts them away for the winter without providing sufficient stores. A very good practice is to feed each colony of bees 10 to 15 pounds of sugar syrup, whether the colony seems to need it or not; and if sugar syrup, made at the rate of two pounds to one pound of water, is fed to the bees after the brooding season is over, they will store it in the brood nest just below the winter stores. Pure sugar syrup stores are free of pollen, gums and dextrins, and are usually very satisfactory for winter food.

If a colony of bees, including hive body, bottom board and cover, weighs less than 50 pounds when put away for the winter, there is a considerable chance that the colony will not have sufficient winter stores, and sugar syrup stores should be fed to the bees to make the weight of the colony up to 55 to 60 pounds.

A very serviceable feeder for giving the sugar syrup can be made from an ordinary friction top pail with a few small holes punched in the cover. Cover the top of the hive with thick wrapping paper having a small round hole in the center. Set the feeder on top of this inside of an empty hive body. When the bees have taken the syrup all down, remove the feeder, put on the cover, and the bees are ready for winter so far as stores are concerned.

Some Fall Jobs

(*Continued from page 29*)

pump was experienced last winter, it was probably due to the fact that no method of draining was provided. In an open type of well, or drilled well with a dry wall at the top, drainage can be provided by drilling a small hole above the pump cylinder and about three or four feet below the surface of the ground. A quarter inch hole with a pet cock and a rod extended to the well platform, to open and close as desired, is sometimes used, but more often a small opening not more than one-eighth inch is made and left open all winter, and plugged during the summer. Such a scheme will waste some water while the pump is working, but the amount is very slight. It is a safe way to drain the pump down to the level of the hole, which eliminates the danger of freezing.

Classified Advertising

AGENTS WANTED

$300.00 A MONTH TO DISTRIBUTE EVERYday household necessity in rural and small town districts. No money needed. Million dollar firm behind it. Write for particulars and state territory desired. A. A. Johnson, 611 W. Lake, Chicago.

WE PAY $36 A WEEK AND EXPENSES AND give a Ford Auto to men to introduce poultry and stock compounds. Imperial Co., D-20, Parsons, Kan.

AGENTS WANTED TO ADVERTISE OUR GOODS and distribute free samples to consumers; $6 an hour; write for full particulars. American Products Co., 1907 American Bldg., Cincinnati, O.

$20.00 PROFIT DAILY SELLING NEEDLEbooks; costs 3c-5c each; sells 25c, value 50c; three samples, 25c; catalogue free. Needlebook Specialty Co., 661 Broadway, New York.

Classified Advertising

Be a word, set uniform style. Count each initial, abbreviation, number or group of numbers as one word. Write advertisement on separate sheet. Cash must accompany order.

Forms close 15th of month.

FARMS AND ORCHARDS

FLORIDA FARMING—IT PAYS IN ALACHUA county. Located in central Florida's beautiful hill and lake region. Excels in general farming—citrus fruits, vegetables, staples, livestock, pigs, poultry. Important developments in cucumbers, cabbages, lettuce, watermelons, bulbs, tung oil, early Irish potatoes, cigarette tobacco, Satsuma oranges. Healthy living conditions. Home of Florida State University. Excellent highways; mainline railroads. Write for free illustrated booklet. Alachua County Chamber of Commerce, Box 953, Gainesville, Florida.

FOR SALE—160-ACRE FRUIT FARM TWO miles from Roswell, New Mexico, all modern equipped, artesian water well, packing houses and sheds, seven room modern dwelling, 9000 bushels apples and 3,500 bushels peaches in 1923, 20,000 bushels apples 1924. For further information address Paul Trees, Winfield, Kansas.

EXCELLENT 187-ACRE FRUIT AND POULTRY farm; 100 clear, balance timber. 34 acres fruit trees; 9 vineyard; 6 henhouses. Farm implements, etc. Part payment considered. Apply Edward Aldrich, Snowhill, Maryland.

PEACH AND PECAN ORCHARD—25,000 PEACH trees, 1500 pecans, 2,500 acres land near Albany, Georgia. Fully equipped. Fine prospects. Will be sold at bargain. Fugazzi Bros., 28 West Front, Cincinnati.

VINEYARD, ORCHARD. IDEAL SUBURBAN home, six miles from Philadelphia, Pennsylvania. Trolley; state road. $32,000. Address C-113, American Fruit Grower Magazine.

BEARING APPLE ORCHARD WITH IMPROVEments, in the Ozarks. 63 acres in all, 40 in orchard. $10,000. Write for pictures. Horace W. Thompson, Gentry, Arkansas.

FINE FRUIT FARM FOR RENT, EXCELLENT location; markets nearby. To reliable industrious man. Kentucky. Address W-110, American Fruit Grower Magazine.

WANTED—TO HEAR FROM OWNER OF FARM for sale, for fall delivery. O. K. Hawley, Baldwin, Wis.

HELP WANTED

EARN $110 TO $250 MONTHLY, EXPENSES paid as Railway Traffic Inspector. Position guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for Free Booklet G-100. Stand. Business Training Inst., Buffalo, N. Y.

ALL MEN, WOMEN, BOYS, GIRLS, 17 TO 65, willing to accept Government Positions, $117-$300, traveling or stationary, write Mr. Ozment, 259, St. Louis, Mo., immediately.

RAILWAY POSTAL CLERKS START $133 month. Railroad pass, expenses paid; questions free. Columbus Institute, V-33, Columbus, Ohio.

I WANT EXPERIENCED WORKING HORTIculturist for private Virginia orchard. J. A. Patterson, 130 S. 15th St., Philadelphia, Pa.

HELP WANTED—FEMALE

EARN MONEY AT HOME DURING SPARE time painting lamp shades, pillow tops for us. No canvassing. Easy and interesting work. Experience unnecessary. Nileart Company, 2266, Ft. Wayne, Indiana.

WANTED—LADIES TO EMBROIDER LINENS for us at home during their leisure moments. Write at once. "Fashion Embroideries," 1528, Lima, Ohio.

PATENTS AND TRADE-MARKS

"PATENT PARTICULARS" AND ADVICE ON trade-marks, free. Write. Sterling Buck, W-629F, Washington, D. C.

DOGS—PET STOCK

THE WORLD'S LARGEST DOG KENNELS—Offer for sale Oorang Airedale watch dogs, automobile dogs, children's companions, farm dogs, stock drivers, hunters and retrievers. Also Big Game Hounds, Coonhounds, Foxhounds, Rabbit Hounds and thoroughbred hound and Airedale puppies. Satisfaction and safe delivery guaranteed to any point in the United States. Large illustrated descriptive catalog mailed free. Oorang Kennels, Box 133, La Rue, Ohio.

NURSERY

FRUIT TREES, GREATLY REDUCED PRICES, direct to planters in small or large lots by express, freight or parcel post. Free 68-page catalog. Peaches, apples, plums, pears, cherries, grapes, nuts, berries, pecans, vines. Ornamental trees, vines and shrubs. Tennessee Nursery Co., Box 101, Cleveland, Tenn.

20,000 ONE-YEAR-OLD ELBERTAS, 3 TO 5 feet, $60 per thousand; also 100,000 Elberta and Wiley June buds, 18 to 30 inches, $50 per thousand. All stock healthy, true to name, and state inspected. J. F. and B. H. Copeland, Shiloh, Georgia.

ABOUT 20,000 LARGE, CLEAN, VICTORY AND Early King red raspberry plants. November delivery. Reasonable. J. E. Harrington, Sycamore, Illinois.

POSITIONS WANTED

WANTED—POSITION MANAGER OF LARGE size apple or pear orchard. Have had twenty year's experience as owner and operator. Location anywhere in the United States. Would purchase interest or build cold storage plant for fruit in any district where crop showed promise. Address H-114, American Fruit Grower Magazine.

ORCHARDIST—COLLEGE GRADUATE, WIDE experience in production and marketing desires position managing commercial orchard. Best references including present and past connections. Address H-11, American Fruit Grower Magazine.

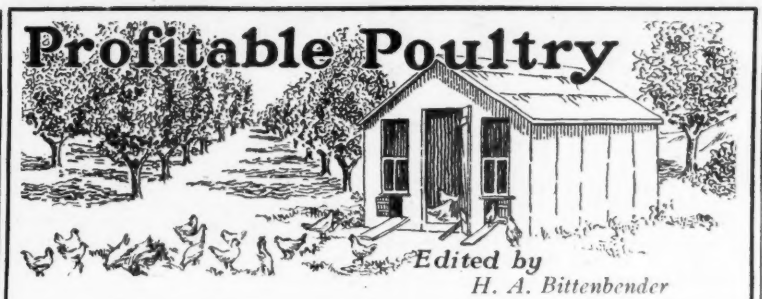
CLERK, WELL EXPERIENCED IN NURSERY business, correspondent in foreign languages, wants office position. Address B-112, American Fruit Grower Magazine.

MAN WITH WIDE EXPERIENCE IN FRUIT growing will take charge of large orchard anywhere after December 31st. Address H-111, American Fruit Grower Magazine.

(Continued on opposite page)

I Make the Best CHOCOLATE BARS

Mints and Chewing Gum. Be my agent. Everybody will buy from you. Write today. Free Samples.
MILTON GORDON, 237 Jackson St., Cincinnati, Ohio.



Edited by
H. A. Bittenbender

What the Market Demands in Poultry and Eggs

POULTRY products from our average farms are eggs and live poultry. These are generally marketed through the local dealer in the town where the farmer does his trading. The marketing problem is not as difficult for the average farmer as is the marketing of the poultry products from the farm where poultry is kept as one of the main branches of the farm.

Poultry Marketing a Seasonal Proposition

The marketing of the various poultry products is a seasonal proposition, and the products do not usually pay best if marketed out of season. Take capons, for example. Although there is a price per pound placed on capons at all times of the year, the premium, or fancy, price per pound is paid during the months of January, February and March, which means they should be sold during these months unless they can be disposed of at home to good advantage.

The raising of capons for the market should be given considerable thought by the farmer before entering into this end of the industry. In order to realize the premium that is paid for capons, it is necessary to keep them until the market opens for them, which oftentimes is impossible for the average farmer because he does not have the housing facilities and the equipment to handle them.

Another point to consider in marketing capons is weight. The best prices paid for capons are always for the heavy birds of eight pounds or better in weight. Seven pound capons bring a little lower selling price, and birds of six pounds or under are not particularly wanted. The weight clause brings up the factor of the best breeds of chickens to use for capons. The Plymouth Rocks, Wyandottes or Rhode Island Reds are all very satisfactory breeds for capon production.

The most satisfactory way to market capons is to ship them alive to some good reliable commission man in one of the larger markets where a premium is paid for good birds. Be sure your birds are fat and in good condition and are up to the weight requirements. Each coop should be labeled as to what it contains. In case they are killed and dressed they should be labeled "Capon Style."

Marketing of Broilers

The marketing of broilers is again a seasonal proposition and should be practiced to a greater extent than it is now. The broiler market is generally the best during the late spring, when the consuming public is beginning to think of fried chicken once more; that is, during the latter part of April, May and the early part of June. After this there is not much advantage in trying to market broilers. One thing should always be kept in mind, and that is that the market very seldom goes up, but is more apt to be on the decline, as the supply to the market increases.

The weights which the market demands and pays a premium for are as follows: One and one-half to two pounds, and not to exceed two and one-quarter pounds. Lighter birds are not wanted, and heavier birds go into a grade known as "Fryers," for which no premium is paid.

To market the chicks as broilers, it is necessary that they be hatched early and that they be kept growing steadily, so that the surplus cockerels can be placed on the market at the right time. Another big advantage of marketing the surplus cockerels as broilers is that it gives more room in the houses for the development of the pullets. There is also less danger of disease among the chicks, as the quarters are less apt to be overcrowded, and the saving of the feed that it would take to grow the birds to a heavier weight should be considered.

Many times the surplus cockerels are kept until fall, when they are put on the market weighing four to five pounds. Frequently they sell for much less per pound and do not bring as much as they would have if sold when weighing one and three-fourths to two pounds. Besides, there is always the feed cost, mortality and injury to the developing pullets which must be considered.

Direct Marketing of Eggs

The direct marketing of eggs is becoming a more common practice among the producers. Farmers who are producing one, two or three cases of eggs per week can generally realize more profits for their eggs if they are situated so that they can ship direct to some responsible buyer or commission man in the city. When the larger markets are not favorable, they can always fall back upon the local dealer.

In shipping eggs direct, care should be taken to see that the eggs are properly packed in a 30-dozen case. New case fillers and flats should be used, as well as the six excelsior pads, placed as follows: One pad on the bottom, one under the top layer and one on top. This is the standard pack as recommended by the American Railway Association.

The eggs that are to be shipped should be clean, fresh, free from checked or cracked eggs and should weigh 24 ounces or more per dozen. Small, dirty or stained eggs should not be shipped.

Uniformity of size should be kept in mind, and all eggs packed should be of approximately the same size so as to make a neat appearing package.

Eggs for Hatching Must Be Handled Carefully

Damage oftentimes results from careless packing of eggs in the cases that can be avoided by proper packing. The handling and packing of hatching eggs is often neglected and results in many eggs being rendered unfit for incubation purposes. Eggs that are to be used for incubation should be carefully packed in excelsior or some paper container and packed firmly into a basket or box of some kind, care being taken to prevent the eggs from coming in contact with each other.

Containers holding eggs for incubation should be plainly marked "Eggs for Hatching, Handle with Care," so that the eggs may get the best possible care while being handled by the express companies or railroads.

The marketing of the poultry products from the farm must be given more study and attention by the farmer if he is to realize all the money from his products that it is possible for him to make.

Can you enjoy a pipe?

Mr. Moxley says he couldn't until he found this tobacco

There are smokers of tobacco in other forms who look with envious eyes on the contented and comfortable pipe-puffer.

For there is an obvious peacefulness about pipe-smoking that rests the nerves and invites the soul to calm and pleasant contemplations.

Millions of men do smoke pipes with undiluted satisfaction. Other thousands try a pipe, get their tongues burned, find the draught too strong, or have some other unhappy experience that discourages them.

Our business, in a word, is to make pipe-smoking pleasant and enjoyable to any man that fancies this mode of tobacco incineration. We strive to do this by providing a tobacco that doesn't bite the tongue, doesn't smoke too strong, doesn't leave an after-taste.

But we'll let Mr. Moxley tell it. Here is what he writes:

Larus & Bro. Co.
Richmond, Va.
Gentlemen:

St. Louis, Mo.
March 10, 1924.

Please allow me to say a word of praise for "Edgeworth." Last fall I thought I would try again to smoke a pipe—so I bought a pipe and a can of "Edgeworth" and can say very gladly that so far I have not had any sore tongue nor do I feel any "after-taste" from smoking. This is more important when you take into consideration that heretofore I had been unable to smoke a pipe on account of the sickening sensation I had afterward, but that is gone forever, and I for one am truly glad to be able to get the one good smoke, "Edgeworth."

Give my regards to Mr. Joe Rivers and Mr. James Edmund.

(signed) Al J. Moxley

(We infer from the last paragraph of Mr. Moxley's letter that the good lodge brothers, Rivers and Edmund are credited with giving him the real inside stuff on Edgeworth. Our acknowledgments to them.)

Let us send you free samples of Edgeworth so that you may prove out all the virtues that its smokers claim for it. If you like it, so much the better for us both. If you don't—well, that's *that!*

Write your name and address to Larus & Brother Company, 83 South 21st Street, Richmond, Va.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Ready-Rubbed are packed in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy-in-between sizes.

We'll be grateful for the name and address of your tobacco dealer, too, if you care to add them.

To Retail Tobacco Merchants. If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Ready-Rubbed for the same price you would pay the jobber.

XUM

How Good Railway Service is Benefiting the Farmers

STRIKING proof of the great value of **good and adequate** railway service is given by the way this year's grain movement has been handled. The prices of grain began in June to advance rapidly. Between June 2 and October 7 the cash price of wheat in the Chicago market advanced from $1.10 to $1.50 a bushel; corn from 77½ cents to $1.12½; oats from 47½ to 56½ cents; rye from 67½ cents to $1.31½.

The farmers desired to ship their grain rapidly to take advantage of these rising prices. **The railways were all ready to handle the business. They had moved more freight cars to the west last spring for grain handling than ever before.** They have kept on moving cars west as fast as they have been needed. They have given the farmers the best service in handling grain that was ever known.

Record-Breaking Movement of Grain

In the seven weeks ended September 27 the railroads loaded 460,000 cars with grain and grain products. This is 121,500 more than in the corresponding weeks of 1919; 157,000 more than in 1920; 61,000 more than in 1921; 84,000 more than in 1922, and 87,000 more than in 1923.

The United States Department of Agriculture said in a recent bulletin: "Movement of wheat has been heavy and accomplished with no little credit to the railroads." Eugene Meyer, Jr., Managing Director of the War Finance Corporation, said: **"Railroad efficiency in moving the crop has been without precedent."**

Good Service Depends on Fair Rates

When people are disposed to criticise freight rates, should they not stop and think that the kind of service the railways can give depends on the rates they are allowed to charge and the earnings they make?

Freight rates were reduced in 1922. There has been a strong demand since then for additional reductions in the rates on farm products. If these reductions had been made, the railways would have been crippled financially. They would not have been able to raise capital with which to buy many new locomotives and cars. They would not have been able to put and keep the locomotives and cars they already had in good condition. There would have been a "car shortage." Many thousands of farmers would not have been able to ship their grain and take prompt advantage of the higher prices.

Many New Locomotives and Freight Cars

But the reductions in rates sought since 1922 have not been made. In consequence, the railways have been able to buy large numbers of new locomotives and cars. In the year 1923 and in the first seven months of 1924, they bought 5,145 new locomotives and 271,397 new freight cars. They also spent a large amount of money in improving and increasing the capacity of their tracks and terminals.

These are the things that have made it possible for the railways this year to give the farmers better service than ever before in handling the crops. The benefit the farmers are deriving from this good service is worth many millions of dollars more to them than any reductions of rates that were proposed would have been.

How Good Service Can Be Continued

The kind of service the railways will be able to give the farmers will depend in future, as it has in the past, upon the way they are regulated. In order to continue to give good service the railways must be allowed to charge rates which will enable them to earn enough to pay their operating expenses, taxes, and a fair return on the value of their properties as found by the Interstate Commerce Commission in accordance with the law.

In the year 1923 their operating expenses per mile were 110 per cent more than in 1913 and their taxes per mile 162 per cent more. Rates cannot be safely reduced until operating expenses and taxes are reduced. The Railways for some years have paid more taxes than they have paid in return to their owners.

This is one of a series of advertisements published to give the farmer authentic information about railroad matters. Any questions that you would like to ask will be cheerfully answered. Address:

WESTERN RAILWAYS' COMMITTEE ON PUBLIC RELATIONS

650 Transportation Building, Chicago, Illinois

S. M. FELTON, President, Chicago Great Western Railroad,
L. W. BALDWIN, President, Missouri Pacific Railroad,
RALPH BUDD, President, Great Northern Railway,
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Experts Present Latest Information on Scale Control

ENTOMOLOGISTS of the United States Department of Agriculture, the Purdue University Agricultural Experiment Station and the Illinois Natural History Survey met at Vincennes, Ind., September 26, to study the results of the past four years' experiments with oil emulsions for the control of the San Jose scale. Those in attendance and subscribing to the recommendations were A. J. Ackerman and B. A. Porter, government entomologists of the Bentonville, Ark., and Vincennes, Ind., laboratories, respectively; W. P. Flint, entomologist of the Illinois Natural History Survey; and J. J. Davis, entomologist of the Purdue Agricultural Experiment Station. As a result of the conference, definite recommendations were made for Illinois and Indiana. The same recommendations will undoubtedly apply to all sections of similar latitude.

San Jose scale can be controlled with miscible oils, lubricating oil emulsions, and under certain conditions with lime sulphur sprays.

Experiments the past season corroborate former results.

For scale control on apple, the oil sprays applied in the fall or spring when the trees are fully dormant and the temperature about 40 degrees Fahrenheit are recommended, spring treatments being preferable.

The oil sprays found effective are the boiled lubricating oil emulsion, and the commercial miscible oils that have been tested, the miscible oils to be used at the rate recommended by the manufacturers, and the lubricating oil emulsion at a two per cent strength as recommended in the government and state publications. In heavy infestations, a three per cent emulsion will give slightly better control. The "cold mixed" oil emulsions have also proven effective, but more difficulty has been experienced in making stable emulsions.

For the control of the scale on peach, the results of experiments to date show no injury to trees from dormant applications with the two or three per cent lubricating oil emulsion. The oil sprays alone are ineffective as fungicides, and although tests to date indicate the possible value of a combination oil and Bordeaux spray for the control of scale and peach leaf curl, these results are not sufficiently complete to permit recommendations. If oil is used on peach, the usual applications for the peach leaf curl should be made in addition to assure complete control. Except where scale is threatening or increasing, lime sulphur is preferable for the peach because it will usually control light infestations of scale and is likewise effective against peach curl.

Directions for Making Oil Emulsion

The revised formula for making the stock solution of the boiled lubricating oil emulsion is:

Lubricating oil .....1 gallon
(To date the best results have been obtained with oils within the following limits: 0.87 to .93 specific gravity at 20 degrees Centigrade. Not above two per cent volatility at 110 degrees Centigrade for four hours. Between 90 and 250 seconds viscosity at 100 degrees Fahrenheit with the Saybold test.)

Potash fish oil soap .....1 pound
(Many waters require up to two pounds of soap to maintain stable emulsions.)

Water .....¼ gallon

"Place the water, soap and oil in a kettle or tank heated by fire or steam. Boil for five minutes, being careful not to burn the mixture; remove from the fire or turn off the steam and pump twice through a spray pump at a pressure of 75 to 150 pounds. Make sure that all the mixture passes through the pump twice. Do not allow it to cool before pumping.

"For making the stock emulsion on a large scale, an all-metal pump is necessary. The rotary type has been found very satisfactory for this work. For small amounts, a barrel pump may be used. The stock emulsion should not be made in a cooker which has previously been used for cooking lime sulphur without a thorough cleaning, nor should it be stored in lime sulphur barrels."

(These directions for making lubricating oil emulsion were taken from Illinois Circular 277.)

For proper dilution, add to each 50 gallons in the spray tank, one and one-half gallons of the stock solution for a two per cent or two and one-fourth for a three per cent emulsion. To insure better mixing and prevent separation of oil, add ½-½-50 Bordeaux to the tank before the oil is poured in.

Dormant Spraying Is the Only Recommended Control for the San Jose Scale

Summer sprays with the oil emulsion are not advisable as regular treatments but may be used under special conditions on apple where scale is abundant during the summer and threatens the trees. Some foliage injury may result during very hot weather. No injury has been observed from dormant applications excepting where weather conditions were unfavorable or the emulsion poorly made. Freezing does not seem to interfere with the miscibility of the emulsion if undisturbed while thawing, but jarring or disturbing when frozen may have a harmful effect.

Thorough applications are necessary if scale is to be controlled, and care should be exercised in spraying with oil sprays to reach the under as well as upper surfaces of the branches.

Rambles of a Horticulturist

(*Continued from page* 31)

Growers' Exchange, with headquarters at Buckfield, has been in operation several years but appears to need larger support. A keen interest exists at Hollis, N. H., for the formation of a co-operative there.

Like all other fruit growers, the New England growers are worried about over-production. It seems to me that with the good roads in New England, and with such a great population at their very doors, the growers need not worry much about overproduction. I think that the New England growers are justified in increasing their plantings to such extent as they are absolutely sure they can give them first-class care; but I do not believe they or any other growers should increase their plantings beyond this point.

Interest in Good Homes

Finally, I was much impressed by the New England homes and home surroundings. Everywhere one sees well-painted houses and barns, all in white. The houses and barns are nearly all connected. Of course, this makes it convenient in bad weather, but it seems to me the fire hazard is too great to justify it; in fact, we saw the results of many recent fires, and in practically every case the entire equipment was lost. Insurance rates must be high under such conditions.

Nearly every New England home has a good lawn and well-planted shrubbery. Even small lots in the cities usually have their patches of green grass and shrubs around the porches and house corners. And the trees, practically the elms and pines, are wonderful. Schools, churches, townhalls and roads all speak eloquently of the interest of New England people in home and community life. There are a lot of things said these days about the decay of civilization and about the country following the footsteps of Rome, etc., but the writer cannot help but have a lot of confidence in the future of a country which rests on a substantial foundation of farm homes such as are found in New England.

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